

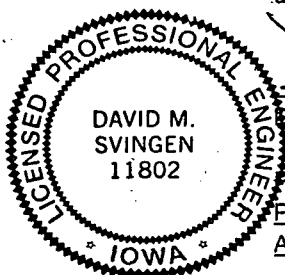
AWQ-16D

ANNUAL MONITORING REPORT 2004  
GROUNDWATER QUALITY AND  
MONITORING WELL PERFORMANCE

MONONA COUNTY SANITARY LANDFILL  
MONONA COUNTY, IOWA  
FACILITY NO. 67-SDP-1-75P

Terracon Project No. 40915034  
November 30, 2004

I hereby certify the portion of this engineering document described below was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.



*David M. Svingen*  
David M. Svingen

Certificate No. 11802

Pages or sheets covered by this seal: Annual Report 2004  
Pages 1 - 8; Appendix A - Figures 1 - 6; Appendix B;  
Appendix C - Tables 1 - 3

Date Issued: November 30, 2004  
License Renewal Date: 12/31/05

**Prepared for:**

MONONA COUNTY SANITARY LANDFILL COMMISSION  
Monona County, Iowa

**Prepared by:**

TERRACON  
Omaha, Nebraska

**Terracon**

**DATE STAMP**

November 30, 2004

Monona County Sanitary Landfill Commission  
c/o Mr. Harold Johnston  
31342 State Highway 37  
Turin, IA 51059

**Terracon**  
Consulting Engineers & Scientists

2211 South 156th Circle  
Omaha, Nebraska 68130-2506  
Phone 402.330.2202  
Fax 402.330.7606  
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Re: Annual Monitoring Report 2004  
Groundwater Quality and Monitoring Well Performance  
Monona County Landfill  
Permit No. 67-SDP-1-75P  
Terracon Project No. 40915034

Dear Mr. Johnston:

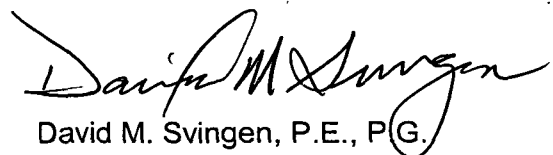
Enclosed is a report for the annual monitoring of groundwater quality and monitoring well performance for the Monona County Landfill. This report serves to meet Iowa Department of Natural Resources (IDNR) annual monitoring reporting requirements set forth in IDNR's Regulations for Solid Waste Disposal, Chapter 103. This report does not, however, contain site inspection/special waste authorization information. We understand that site inspection/special waste authorization information is to be reported by Virtue Engineering, the registered design engineer as specified in the landfill's permit (No. 67-SDP-1-75P).

Thank you for the opportunity to be of continued service to you on this project. If there are any questions concerning this report, please contact us.

Sincerely,  
**TERRACON**



Rod Baumann, P.G.  
Project Geologist



David M. Svingen, P.E., P.G.  
Principal  
Iowa License No. 11802

RMB/DMS:rmb/yms/leb

Enclosure

Copies to: Addressee (1)  
Solid Waste Section, IDNR, Wallace State Office Building, 900 East Grand Avenue, Des Moines, IA 50319-0034 (1)  
IDNR, Field Office No. 4, 706 Sunnyside Lane, Atlantic, IA 50022 (1)

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**ANNUAL MONITORING REPORT 2004  
GROUNDWATER QUALITY AND  
MONITORING WELL PERFORMANCE**

**Monona County Landfill  
Permit No. 67-SDP-1-75P**

**Terracon Project No. 40915034  
November 30, 2004**

## **1.0 INTRODUCTION**

The subject site is an existing landfill operating under Iowa Department of Natural Resources (IDNR) permit number 67-SDP-1-75P, in Monona County of western Iowa. The Monona County Landfill is located within the Southwest  $\frac{1}{4}$  of Section 13, in Township 83 North, Range 44 West, in Monona County, Iowa and its location is depicted in Figures 1 and 2 (Appendix A).

Terracon has completed semi-annual water quality sampling and analysis for the 2004 calendar year at the Monona County Landfill in general accordance with the IDNR approved Hydrologic Monitoring System Plan (HMSP), dated February 28, 1995. Semi-annual monitoring consisted of sampling and analyzing groundwater from a total of five water table monitoring wells (one up-gradient well and four down-gradient wells). Surface water sampling and analysis at two locations is also part of the HMSP, but surface water was not present during sampling episodes and was, therefore, not collected. The wells and surface water sampling locations are depicted in Figure 3 (Appendix A). Sampling was performed on the following dates:

- April 30, 2004
- October 13, 2004

Water samples were analyzed for routine annual and semi-annual parameters as specified in Section 103.2(4)e and 103.2(4)f of the Iowa Administrative Code (IAC). Laboratory reports, chain-of-custody documentation, and field data forms have been previously submitted to the IDNR for each semi-annual monitoring event. Copies of these semi-annual documents are retained at the Monona County Landfill.

## **2.0 STATISTICAL CONSIDERATIONS**

Monitoring well MW-5 was considered as the up-gradient location in the water quality monitoring program for semi-annual parameters in groundwater. Surface water was not collected during the background monitoring period and statistical analyses were, therefore, not performed for surface water.

Statistical evaluation of temperature has not been included since temperature data, to a large degree, is dependent upon ambient conditions. Ambient conditions may cause temperature readings to deviate from actual groundwater conditions as a result of the method used to measure groundwater temperatures. Nevertheless, temperatures recorded during the background sampling events do not indicate obvious indications of temperature fluctuations which may be the result of endothermic or exothermic chemical reactions.

Control bounds were computed in general accordance with guidelines set forth in IAC 103.2(6). One-half of the laboratory method detection limit (MDL) was used in statistical computations in instances where chemicals were reported at concentrations below the MDL.

Laboratory analytical summary sheets for each sampling location have been provided in Appendix B. Graphs with control limits showing the concentrations versus time for sampling locations are also included in Appendix B. The semi-annual and annual parameters given statistical consideration are as follows:

Chloride	Chemical Oxygen Demand (COD)
Iron (dissolved)	Ammonia Nitrogen
pH	Specific Conductance
Phenols (total)	Total Organic Halogens

### 3.0 GROUNDWATER IMPACT DISCUSSIONS

Discussion in this section is provided for chemical parameters that fall outside of the upper and lower control limits on a well-by-well basis. Chemical parameters which fall within established control limits are not discussed. Well discussions are presented in reverse order of the well number system (i.e. well MW-5 is discussed first and well MW-1 is discussed last) since this order generally follows an up-gradient to down-gradient progression.

Upper and lower control limits for each of the monitoring wells (MW-1 through MW-5) were based on data obtained for up-gradient well MW-5 as required by IAC Chapter 103.2(b). In some cases, upper and lower control limits are equivalent due to non-detection of certain parameters since monitoring began. In this case, analyte concentrations plot on a single control bound line (no deviation from the mean of the data) instead of between upper and lower control bounds.

### 3.1 MW-5 (Up-Gradient Well)

Analytes whose concentrations fall outside of the control limits established from up-gradient well MW-5 are as follows:

- **Chemical Oxygen Demand:** The June 29, 1996 data point plotted above the upper control limit. Compared to the other data points on the graph, the data point exceeding the upper control limit appears to be anomalous. Monitoring after the June 29, 1996 measurement indicates that the suspect data point is anomalous and not consistent with other monitoring data for chemical oxygen demand at MW-5.
- **Ammonia Nitrogen:** The October 22, 2003 data point plotted above the upper control limit. Prior and subsequent ammonia concentrations have not been detected in well MW-5 and the October 22 data point appears to be anomalous at this time.
- **pH:** The October 28, 1997 data point on the pH graph for MW-5 is anomalously low. The anomalous value of this data point may be attributable to error of the field instrument used to measure pH. Monitoring data for sampling events preceding and subsequent to the October 28, 1997 measurement indicates that the data point is anomalous and not consistent with other monitoring data for pH at MW-5.
- **Specific Conductance:** The April 28, 1998 data point plotted marginally below the lower control limit. This marginal deviation from the control limits is not considered to be statistically significant.

### 3.2 MW-4 (Down-Gradient Well)

Analytes whose concentrations fall outside of the control limits established from up-gradient well MW-5 are as follows:

- **Iron:** Any detection of iron in a down-gradient well will fall outside the control limits established by up-gradient well MW-5. The June 29, 1996 data point plotted above the control limits but appears to be anomalous, based on data which precedes and follows the suspect sampling date. The anomalous iron concentration is not consistent with other monitoring data for iron at MW-4.
- **Ammonia Nitrogen:** The October 22, 2003 data point plotted above the upper control limit. Prior and subsequent ammonia concentrations have not been detected in well MW-4.

- **Specific Conductance:** The August 30, 1996, October 20, 1996, October 28, 1997, and April 28, 1998 data points plotted marginally below control limits. The remaining data points are within the control limits. The suspect data points do not warrant concern at this time.

### 3.3 MW-3 (Down-Gradient Well)

Analytes whose concentrations fall outside of the control limits established from up-gradient well MW-5 are as follows:

- **Specific Conductance:** The October 28, 1997 data point plotted marginally below control limits. The remaining data points are within the control limits. The suspect data point does not warrant concern at this time.

### 3.4 MW-2 (Down-Gradient Well)

Analytes whose concentrations fall outside of the control limits established from up-gradient well MW-5 are as follows:

- **Chloride:** Most of the data points plotted above the upper control limit for chloride. Based on other indications of groundwater impact at well MW-2 (i.e. total organic halogens and specific conductance), the chloride concentrations may be indicative of impact from the landfill.
- **Chemical Oxygen Demand:** The June 29, 1996 and May 2, 2003 data points plotted above the upper control limit for specific conductance. Other data points plotted within the control limits. These two data points do not warrant concern at this time. In particular, the May 2, 2003 data point may be anomalous.
- **Iron:** Any detection of iron in a down-gradient well will fall outside the control limits established by up-gradient well MW-5. The October 24, 1999; April 26, 2000; and October 15, 2002 data points plotted above the upper control limit for iron. At this time, it appears that the detections of iron are anomalous and not consistent with other monitoring data for iron at MW-2. Continued monitoring will allow for further assessment of potential iron impact at well MW-2.
- **Ammonia Nitrogen:** The October 15, 1998 data point plotted above the upper control limit for ammonia. It appears that the detection of ammonia is anomalous and not consistent with other monitoring data for ammonia at MW-2.



- **Total Organic Halogens:** Any detection of total organic halogens in a down-gradient well will fall outside the control limits established by up-gradient well MW-5. Detections of total organic halogens have occurred for each monitoring event where sampling and analysis for routine annual parameters was performed, except the April (May 2) 2003 monitoring event. Results are consistent with detection of 1,1,1-trichlorethane (TCA) compounds made during quarterly background monitoring which took place in 1996. TCA concentrations reported at that time were below the Iowa numerical action level of 200 µg/l. The 200 ug/l is currently a numeric standard for protected groundwater sources in Iowa and is also a federal drinking water standard (health advisory level and maximum contaminant level).
- **Specific Conductance:** Several data points plotted above the upper control limit for specific conductance. Based on other indications of groundwater impact at well MW-2 (i.e. total organic halogens and chloride), the specific conductance concentrations may be indicative of impact from the landfill. Continued monitoring will allow for further assessment of elevated specific conductance at well MW-2.

### 3.5 MW-1 (Down-Gradient Well)

Analytes whose concentrations fall outside of the control limits established from up-gradient well MW-5 are as follows:

- **Chemical Oxygen Demand:** The June 29, 1996 data point plotted above the upper control limit for chemical oxygen demand. It appears that the detection is anomalous and not consistent with other most other monitoring data for chemical oxygen demand at MW-1.
- **Iron:** Any detection of iron in a down-gradient well will fall outside the control limits established by up-gradient well MW-5. Dissolved iron was detected during the first monitoring event and again in October of 1999, 2001, 2002, and 2004. The detectable iron concentrations plotted above the upper control limit but appear to be sporadic. Based on other indications of groundwater impact at well MW-1 (i.e. total organic halogens), the dissolved iron concentrations may be indicative of impact from the landfill. However, the sporadic nature of dissolved iron detections is enigmatic.
- **Ammonia Nitrogen:** Ammonia nitrogen was detected during the October 15, 1998 monitoring event. The detectable ammonia nitrogen concentration plotted

marginally above the upper control limit but appears to be anomalous and not consistent with other monitoring data for ammonia nitrogen at MW-1.

- **Total Organic Halogens:** Any detection of total organic halogens in a down-gradient well will fall outside the control limits established by up-gradient well MW-5. Detections of total organic halogens occurred in seven of nine monitoring events where sampling and analysis for routine annual parameters was performed. Specific halogenated VOCs were not detected in groundwater from MW-1 during quarterly background sampling performed in 1996, as they were in groundwater from well MW-2. Wells MW-1 and MW-2 are located at the down-gradient side of the landfill (see Figure 3, Appendix A).
- **Specific Conductance:** Four of the last six sampling events have revealed specific conductance values plotting above the upper control limit. It is possible that an upward trend in specific conductance may be occurring, especially since impact to groundwater from total organic halogens has been apparent for the past few years. Continued monitoring will allow for further assessment of recent increased specific conductance at well MW-1.

#### 4.0 MONITORING WELL PERFORMANCE

The current site monitoring instruments were evaluated in general accordance with the approved Hydrologic Monitoring System Plan, dated February 28, 1995. The purpose of this evaluation was to assess whether the integrity of groundwater monitoring instruments is sufficient to adequately monitor groundwater at the landfill as described in the approved HMSP.

##### 4.1 Well Location Evaluation [110.9(2)a]

For the 2004 calendar year, groundwater elevation measurement events for five water table monitoring wells (see Figure 3, Appendix A) were conducted monthly by landfill personnel and during semi-annual monitoring by Terracon. The results of these events have been tabulated in Table 1 (Appendix C).

Water levels of individual wells have remained relatively consistent over the past year. In other words, no significant variation in water level fluctuations have occurred for individual wells over the course of the monitoring period. Water levels at MW-1 and MW-2 have remained within the screened interval throughout the year. Water levels measured in wells MW-3, MW-4, and MW-5 were usually above each well's screened interval with some exception. This comparison is made in Table 1 (Appendix C). Water levels outside of the screened interval were within 2½ to

3 feet of the top of the well screen at well MW-3; within one foot of the top of the well screen at well MW-4; and within 1½ to 2½ feet above the well screen in well MW-5.

Ideally, water levels should be within the screened interval for water table monitoring wells, particularly to monitor for the presence of non-aqueous phase liquids (NAPLs) which collect at the water table surface. However, evidence of the presence of NAPLs at the monitoring wells was not observed in 2004. As long as such evidence of NAPL presence is not observed when the water table is within a few feet above the top of the screened interval, the well will suffice as a viable groundwater monitoring point.

The general direction of groundwater flow was evaluated for each month's data. The general groundwater flow direction has not changed since groundwater flow was assessed in 1993 for the hydrogeologic assessment. To demonstrate this finding, water level data from three arbitrarily selected monitoring dates was used to construct water table contour maps (Figures 4, 5, and 6, Appendix A). The inferred groundwater flow direction shown on these maps is similar to the inferred groundwater flow direction depicted on maps presented in the hydrogeologic assessment report and previous annual groundwater monitoring reports.

Based on the above findings, the monitoring wells' positioning, with respect to well depth (vertical) and also with respect to location along the buried waste perimeter (lateral), continues to be adequate. Up-gradient and down-gradient well designations as described in the HMSP should continue to be used.

#### **4.2 Effects of Landfill Operations on Hydrogeologic Setting [110.9(2)b]**

Methods for landfilling of solid waste throughout 2004 have not varied significantly from original landfilling methods employed when landfilling commenced in 1975. Based on groundwater information discussed above in Section 4.1, it does not appear that landfill operations are altering the hydrogeologic setting at the landfill site.

#### **4.3 Well Sedimentation [110.9(2)c]**

According to the approved HMSP, well depths need to be measured annually to evaluate if the wells are physically intact and not filling with sediment. Well depths were measured during semi-annual monitoring events and recorded on IDNR form 542-1322 which accompanied semi-annual analytical reports submitted to the IDNR and retained at the landfill. The results of these measurements, when compared with well depths depicted on boring logs included in the hydrogeologic assessment report (dated February 28, 1995), show that significant silting of site monitoring instruments has not occurred.

#### **4.4 Periodic In-Situ Permeability Tests [110.9(2)d]**

According to the approved HMSP, hydraulic conductivities are to be evaluated at monitoring instruments once every five years. Hydraulic conductivity evaluation of the monitoring instruments was performed during November of 1992, October of 1998, and October of 2003. Results of past hydraulic conductivity testing are summarized in Table 3 (Appendix C). Hydraulic conductivity testing is not scheduled to be conducted again until 2008.

#### **5.0 LEACHATE WELL MONITORING**

Leachate levels were measured monthly by landfill personnel and during semi-annual monitoring by Terracon during 2004. Results of leachate measurements made at leachate wells (LW-1, LW-2, and LW-3) are summarized in Table 2 (Appendix C). Locations of leachate wells are depicted in Figure 3 (Appendix A).

Leachate in well LW-2 has reportedly been bailed on a monthly basis by landfill personnel to reduce leachate. Manual bailing occurs following monthly leachate measurements if leachate thickness is observed to be greater than about 1½ feet. The bailing is conducted until significant leachate volume can no longer be retrieved from the leachate well. Leachate liquid is reportedly stored in a holding tank at a waste transfer station located about one mile northwest of the landfill. Arrangements for disposal of the leachate have not yet been made.

#### **6.0 GENERAL COMMENTS**

The analysis and opinions expressed in this report are based upon data obtained from the monitoring wells installed at the indicated locations and from any other information discussed in this report. This report does not reflect any variations in subsurface chemistry, stratigraphy, or geohydrology which may occur between borings or across the site. Actual subsurface conditions may vary and may not become evident without further exploration.

This report is prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted environmental engineering practices. No warranties, either express or implied, are intended or made. In the event any changes in the nature or location of observed conditions as outlined in this report are found, this report cannot be considered valid unless these changes are reviewed and the opinions of this report are modified or verified in writing by Terracon.

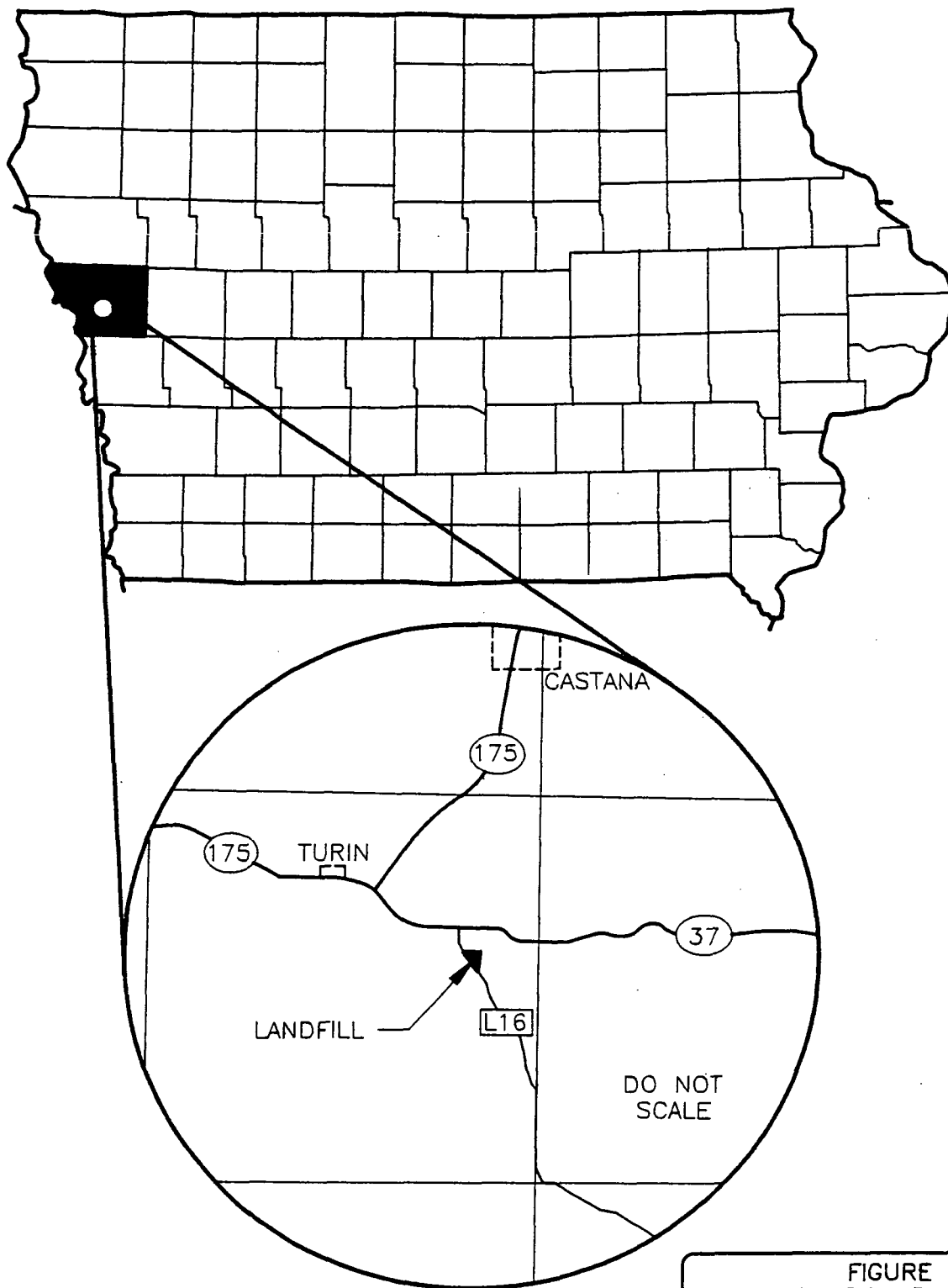
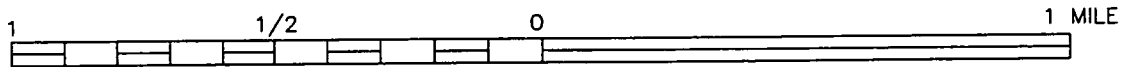
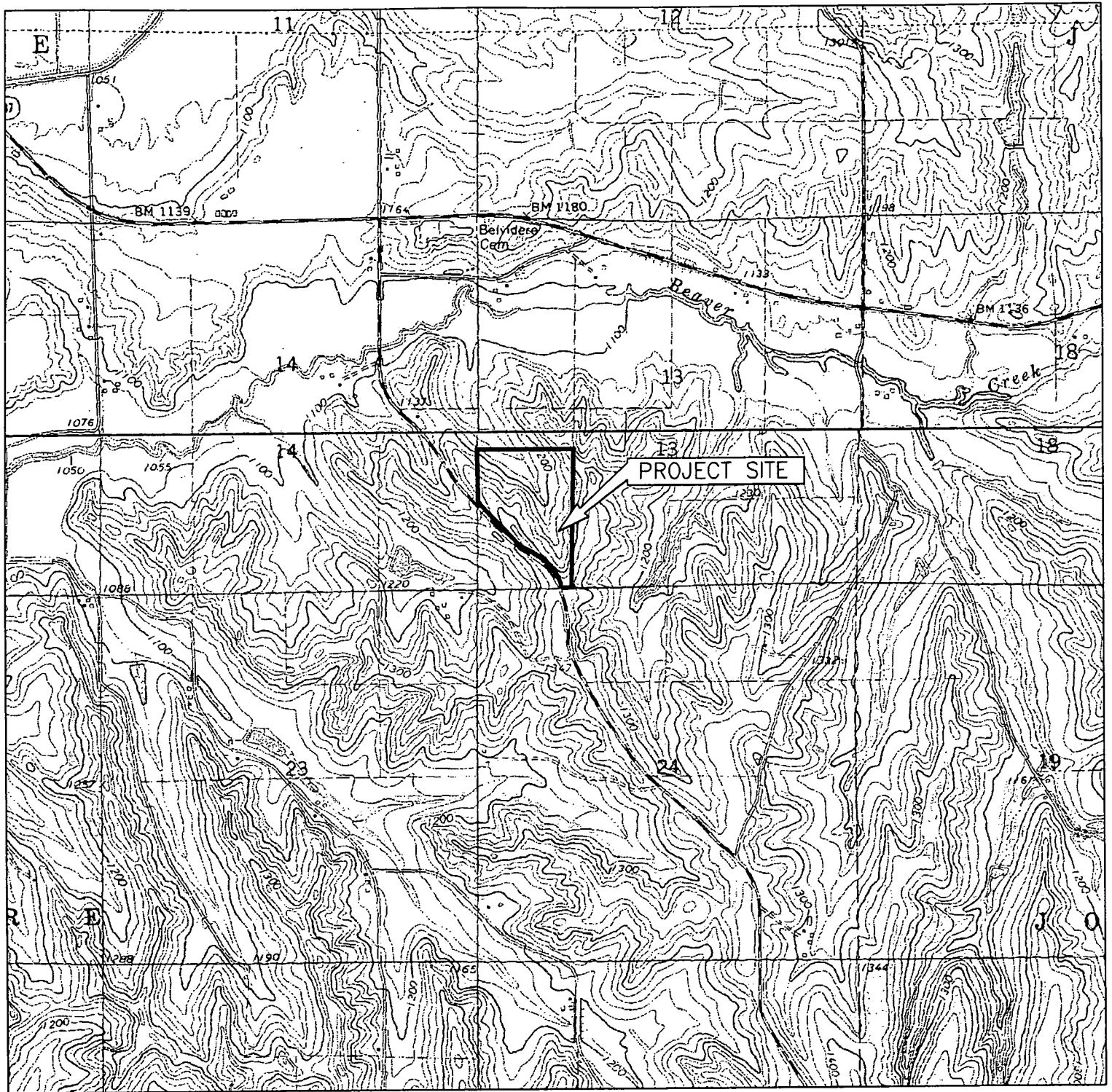


FIGURE 1  
LOCATION DIAGRAM  
MONONA COUNTY LANDFILL  
MONONA COUNTY,  
IOWA  
PROJECT NO. 40915034  
FILE NO. 1E034-1M



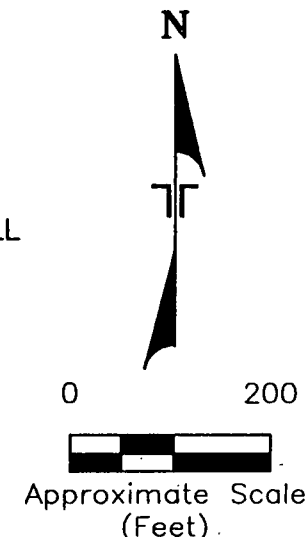
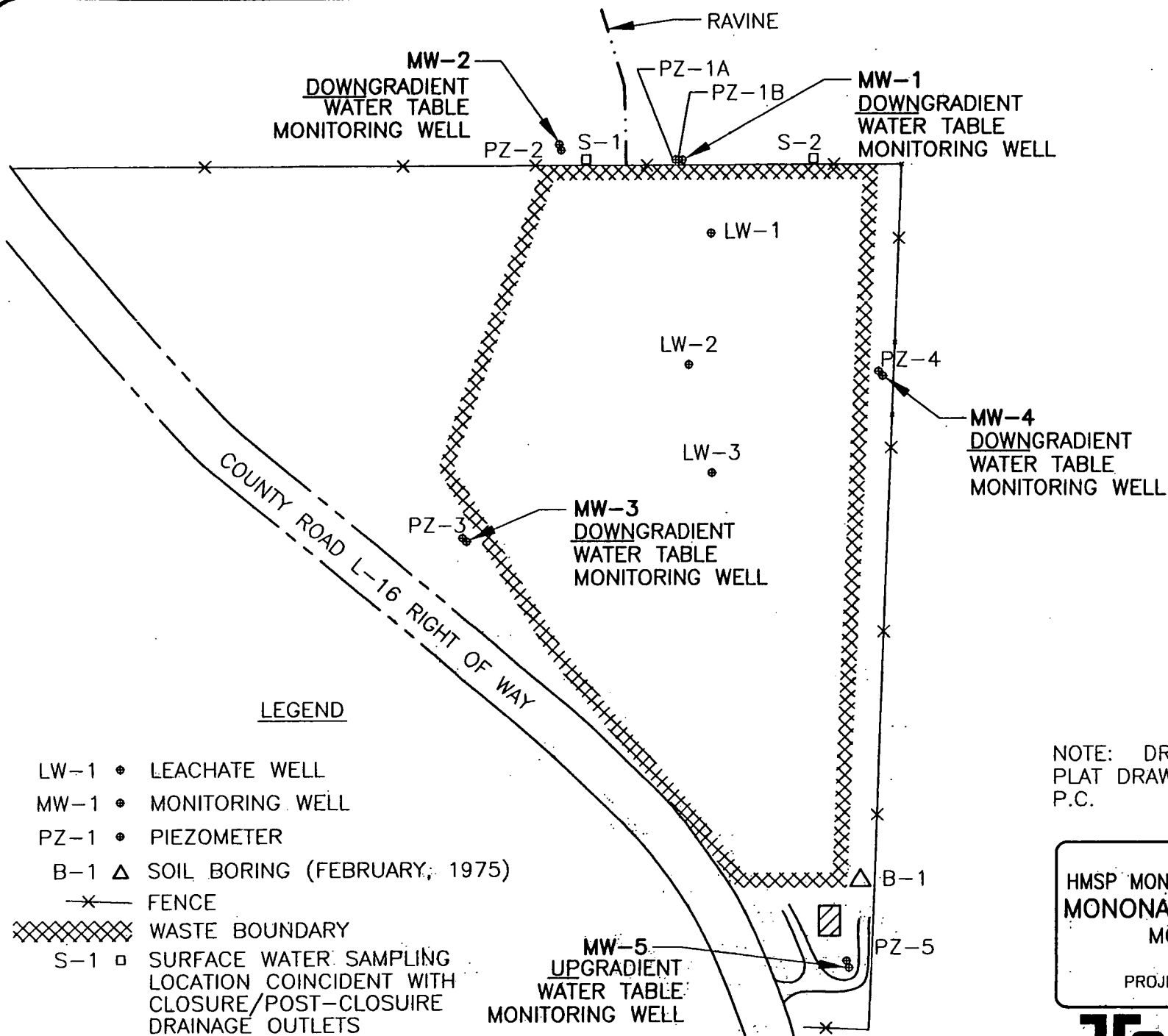
REGIONAL TOPOGRAPHIC MAP  
MONONA COUNTY LANDFILL  
MONONA COUNTY, IOWA

Project Mng'r: RMB  
Designed By: RMB  
Drawn By: RSN  
Checked By: RMB  
Approved By: DMS

**Terracon**  
2211 S. 156th Circle  
Omaha, NE 68130

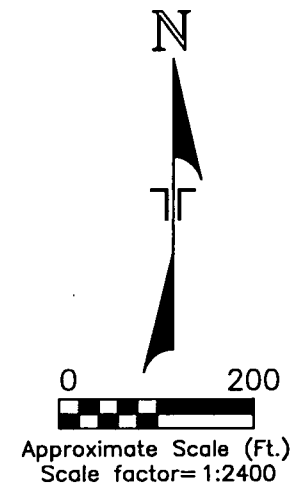
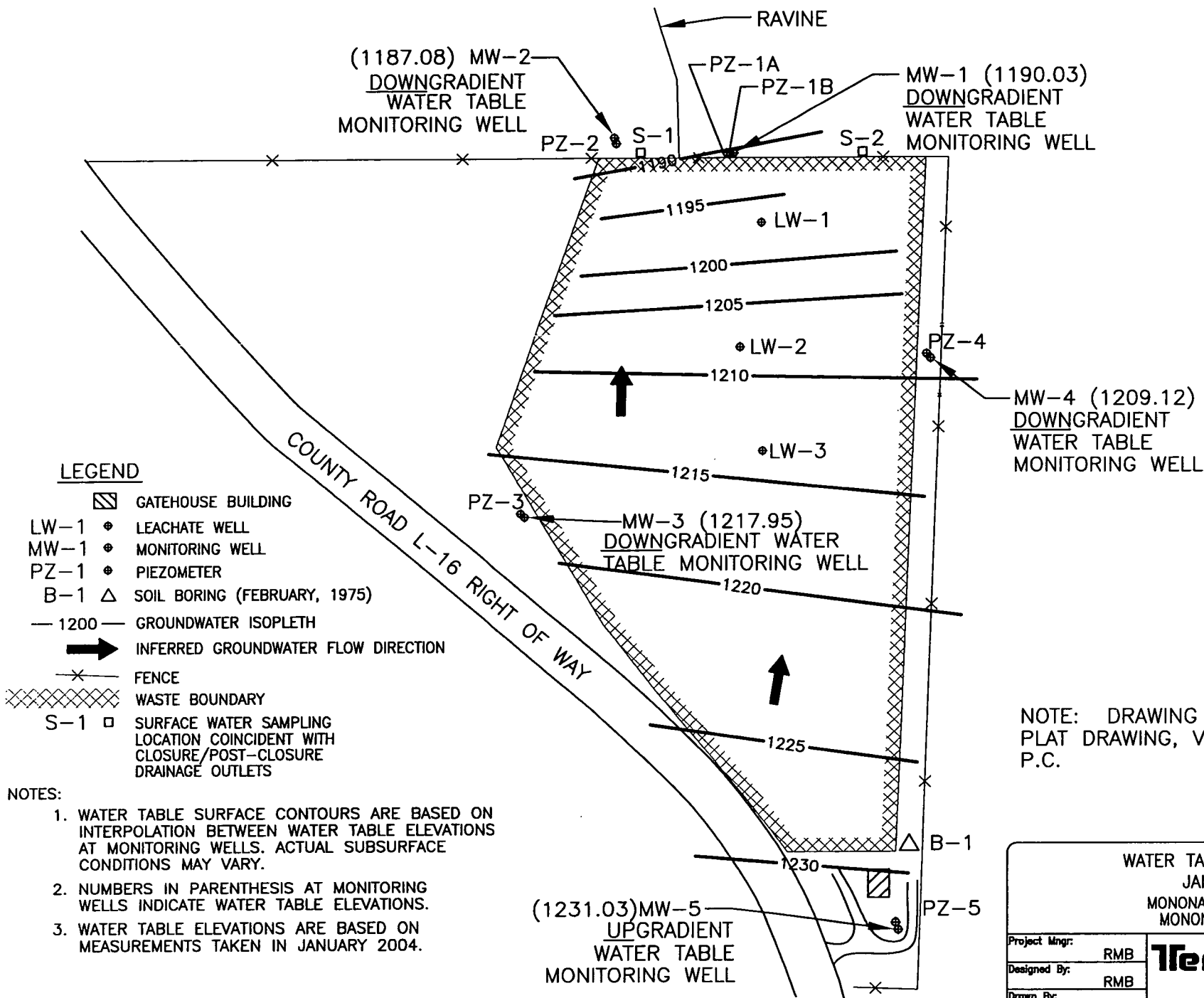
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Date: NOVEMBER 2004

Figure No.



NOTE: DRAWING MODIFIED AFTER PLAT DRAWING, VIRTUE ENGINEERING P.C.

**FIGURE 3**  
**HMSP MONITORING POINT LOCATIONS**  
**MONONA COUNTY LANDFILL**  
**MONONA COUNTY**  
**IOWA**  
 PROJECT NO. 40915034  
 FILE NO. 1E034-12



NOTE: DRAWING MODIFIED AFTER  
PLAT DRAWING, VIRTUE ENGINEERING  
P.C.

NOTES:

1. WATER TABLE SURFACE CONTOURS ARE BASED ON INTERPOLATION BETWEEN WATER TABLE ELEVATIONS AT MONITORING WELLS. ACTUAL SUBSURFACE CONDITIONS MAY VARY.
2. NUMBERS IN PARENTHESIS AT MONITORING WELLS INDICATE WATER TABLE ELEVATIONS.
3. WATER TABLE ELEVATIONS ARE BASED ON MEASUREMENTS TAKEN IN JANUARY 2004.

WATER TABLE CONTOUR MAP  
JANUARY 2004  
MONONA COUNTY LANDFILL  
MONONA COUNTY, IOWA

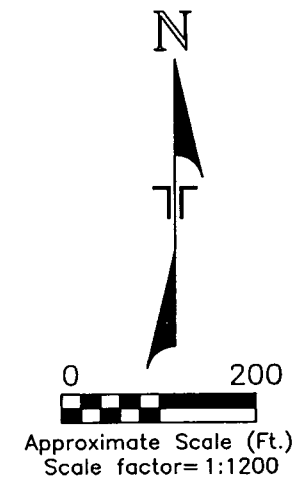
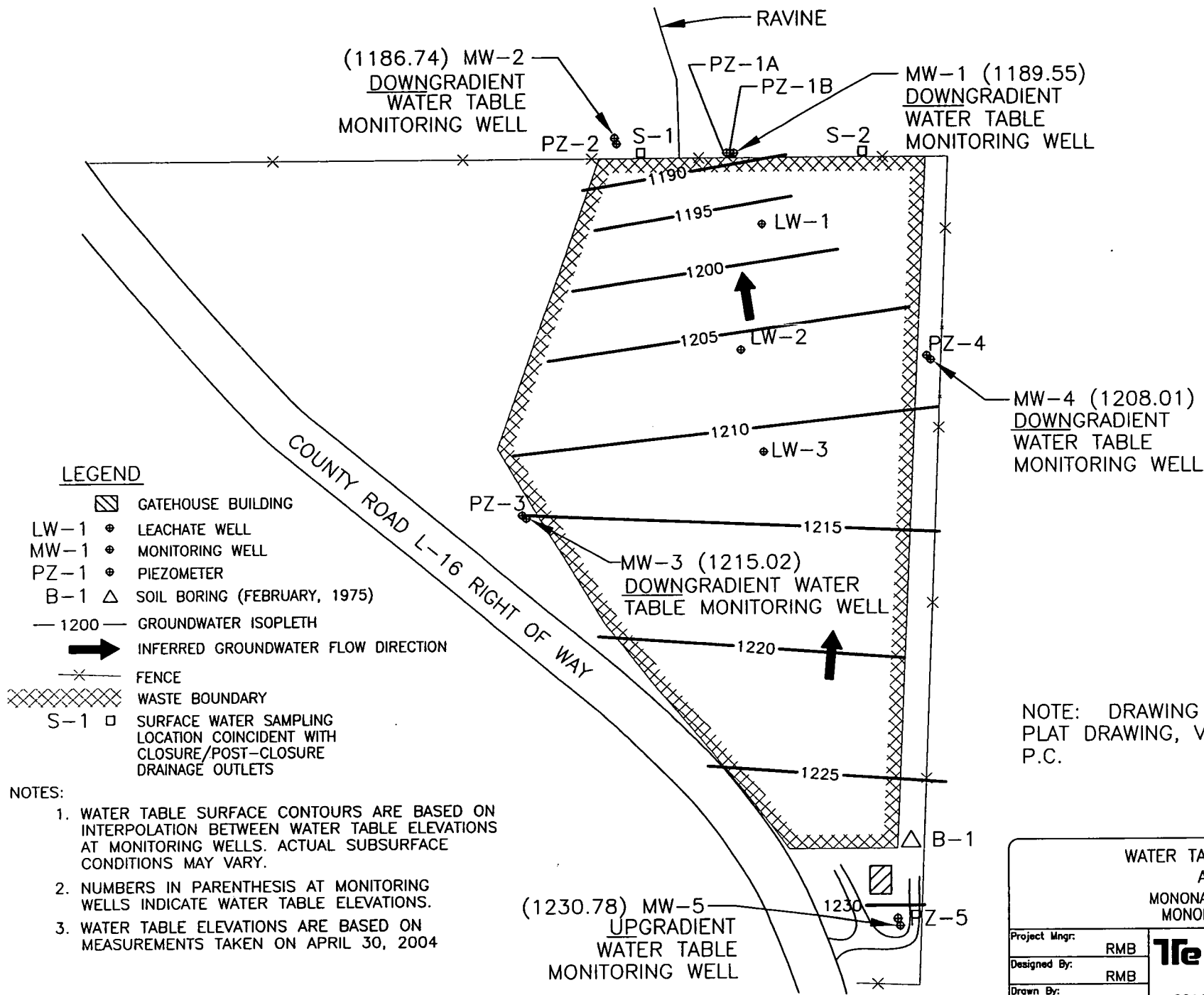
Project Mgr:	RMB
Designed By:	RMB
Drawn By:	RSN
Checked By:	RMB
Approved By:	DMS

**Terracon**  
2211 S. 156th Circle  
Omaha, NE 68130


Project No.	40915034
Scale:	AS SHOWN
File No.	1E034R25
Date:	NOVEMBER 2004

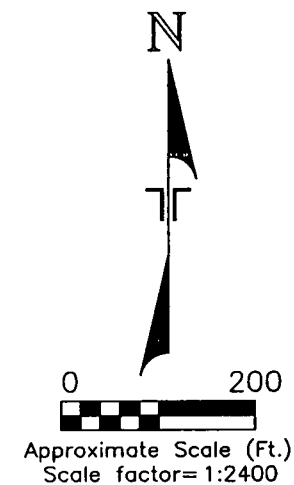
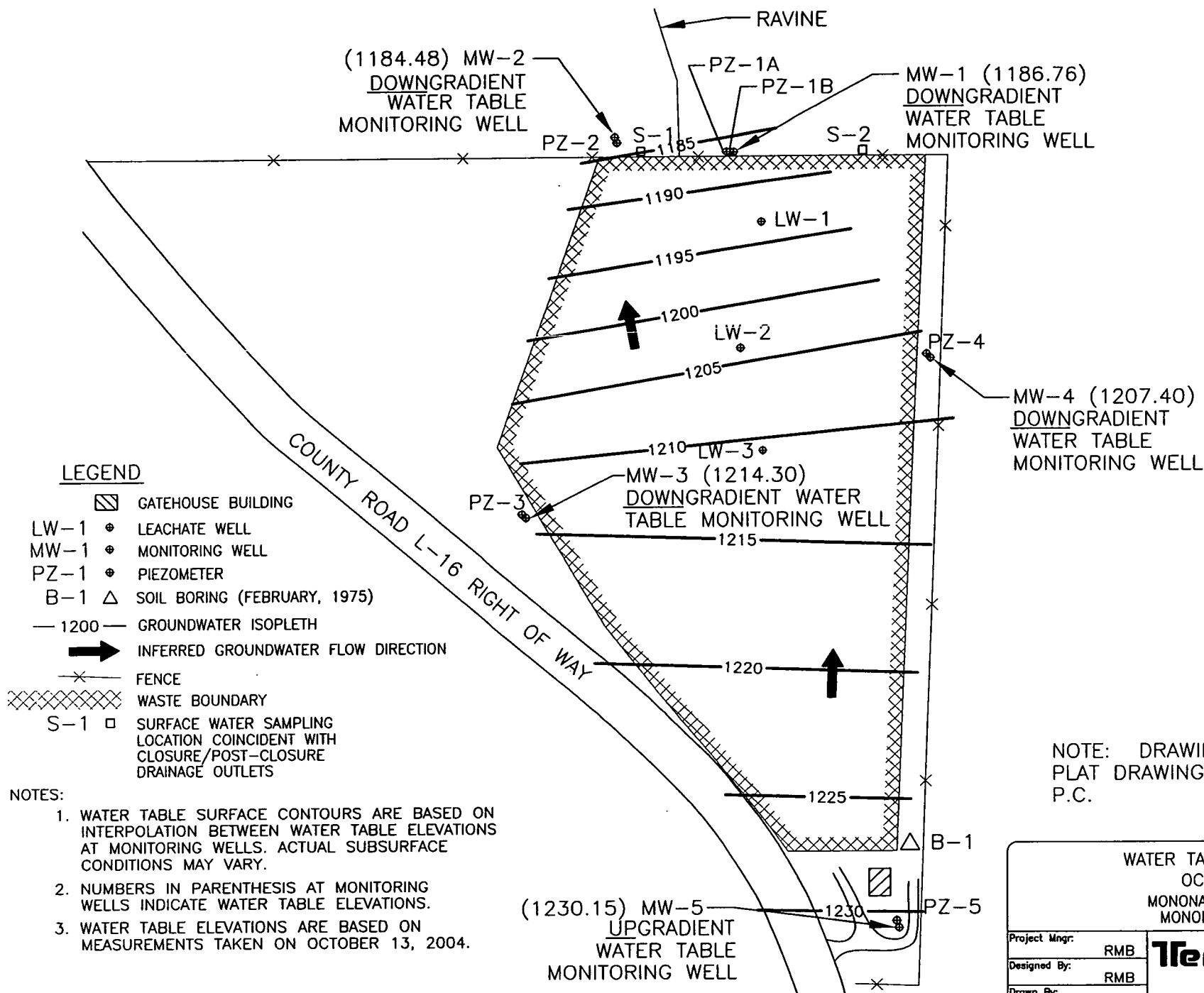
Figure No.





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P.C.

<p>WATER TABLE CONTOUR MAP APRIL 2004 MONONA COUNTY LANDFILL MONONA COUNTY, IOWA</p>			
Project Mgr:	RMB	 2211 S. 156th Circle Omaha, NE 68130	Project No. 40915034
Designed By:	RMB		Scale: AS SHOWN
Drawn By:	RSN		File No. 1E034R26
Checked By:	RMB		Date: NOVEMBER 2004
Approved By:	DMS		Figure No. 5



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P.C.

WATER TABLE CONTOUR MAP  
OCTOBER 2004  
MONONA COUNTY LANDFILL  
MONONA COUNTY, IOWA

Project Mgr:	RMB	<b>Terracon</b>	Project No.	40915034
Designed By:	RMB		Scale:	AS SHOWN
Drawn By:	RSN		File No.	1E034R27
Checked By:	RMB		Date:	NOVEMBER 2004
Approved By:	DMS		Figure No.	6

## ANALYSIS SHEET MW-5

**MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034**

## SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

SAMPLE LOCATION NO. MW-5 (Up-gradient)

ANALYSIS PERFORMED BY: TEST AMERICA INC.

SAMPLED BY: TERRACON

PARAMETER	Statistical Considerations				SAMPLE DATE													
	Upper Control Limit	Lower Control Limit	MW-5 Standard Deviation	MW-5 Mean	10/20/1995	3/29/1996	6/29/1996	8/30/1996	10/20/1996	5/27/1997	10/28/1997	4/28/1998	10/15/1998	4/20/1999	10/24/1999	4/26/2000	10/26/2000	
	via MW-5	via MW-5																
Laboratory Parameters																		
Chloride (mg/l)	20.1	1.68	4.61	10.91	2.5	2.5	5.8	5.4	6.7	9.3	9.9	12	9.8	11	11	11.6	12	
Chemical Oxygen Demand (mg/l)	13.8	0.00	4.77	4.21	2.5	2.5	24	2.5	2.5	5.9	5.7	2.5	2.5	2.5	2.5	2.5	2.5	
Iron, dissolved (mg/l)	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	
Nitrogen, Ammonia (mg/l)	0.29	0.00	0.09	0.12	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Phenols, total (mg/l)	0.01	0.01	0.00	0.01	-	-	-	-	0.01	-	0.01	0.01	-	0.01	-	0.01	-	
Total Organic Halogens (mg/l)	0.005	0.005	0.00	0.01	-	-	-	-	0.005	-	0.005	0.005	-	0.005	-	0.005	-	
Field Parameters																		
pH (SU)	8.17	5.58	0.65	6.87	6.7	7.4	7.20	7.2	7	6.8	4.3	7.1	6.8	7.4	7.0	7.0	7.2	
Specific Conductance (umho/cm)	1175	575	150	875	889	1026	816	680	691	849	644	534	942	1000	970	822	1130	

## NOTE:

- Results shown in bold represent one-half of the laboratory detection limit (MDL) [for parameters reported below the MDL].
- One-half of the MDL was used for parameters reported at concentrations below their respective MDL to compute their respective control limits (mean +/- two times the standard deviation for the chemicals observed at MW-5).
- One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.
- A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- Results from Monitoring Well MW-5 were used to compute control limits - considered up-gradient well

# ANALYSIS SHEET MW-5

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

SAMPLE LOCATION NO. MW-5 (Up-gradient)

ANALYSIS PERFORMED BY: TEST AMERICA INC.

SAMPLED BY: TERRACON

PARAMETER	Statistical Considerations				SAMPLE DATE							
	Upper Control Limit via MW-5	Lower Control Limit via MW-5	MW-5 Standard Deviation	MW-5 Mean	4/27/2001	10/30/2001	4/22/2002	10/15/2002	5/2/2003	10/22/2003	4/30/2004	10/13/2004
<b>Laboratory Parameters</b>												
Chloride (mg/l)	20.1	1.68	4.61	10.91	11.2	12.6	11.3	13.3	17.0	16.8	18.3	19.1
Chemical Oxygen Demand (mg/l)	13.8	0.00	4.77	4.21	<b>2.5</b>	<b>2.5</b>	<b>2.5</b>	<b>2.5</b>	7.6	5.2	<b>2.5</b>	<b>2.5</b>
Iron, dissolved (mg/l)	0.05	0.05	0.00	0.05	<b>0.05</b>	<b>0.05</b>	<b>0.05</b>	<b>0.05</b>	<b>0.05</b>	<b>0.05</b>	<b>0.05</b>	<b>0.05</b>
Nitrogen, Ammonia (mg/l)	0.29	0.00	0.09	0.12	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	0.49	<b>0.1</b>	<b>0.1</b>
Phenols, total (mg/l)	0.01	0.01	0.00	0.01	<b>0.01</b>	-	<b>0.01</b>	-	<b>0.01</b>	-	<b>0.01</b>	-
Total Organic Halogens (mg/l)	0.005	0.005	0.00	0.01	<b>0.005</b>	-	<b>0.005</b>	-	<b>0.005</b>	-	<b>0.005</b>	-
<b>Field Parameters</b>												
pH (SU)	8.17	5.58	0.65	6.87	7.0	7.0	7.0	6.1	6.9	7.1	7.1	7.0
Specific Conductance (umho/cm)	1175	575	150	875	900	941	1022	771	912	1022	1011	805

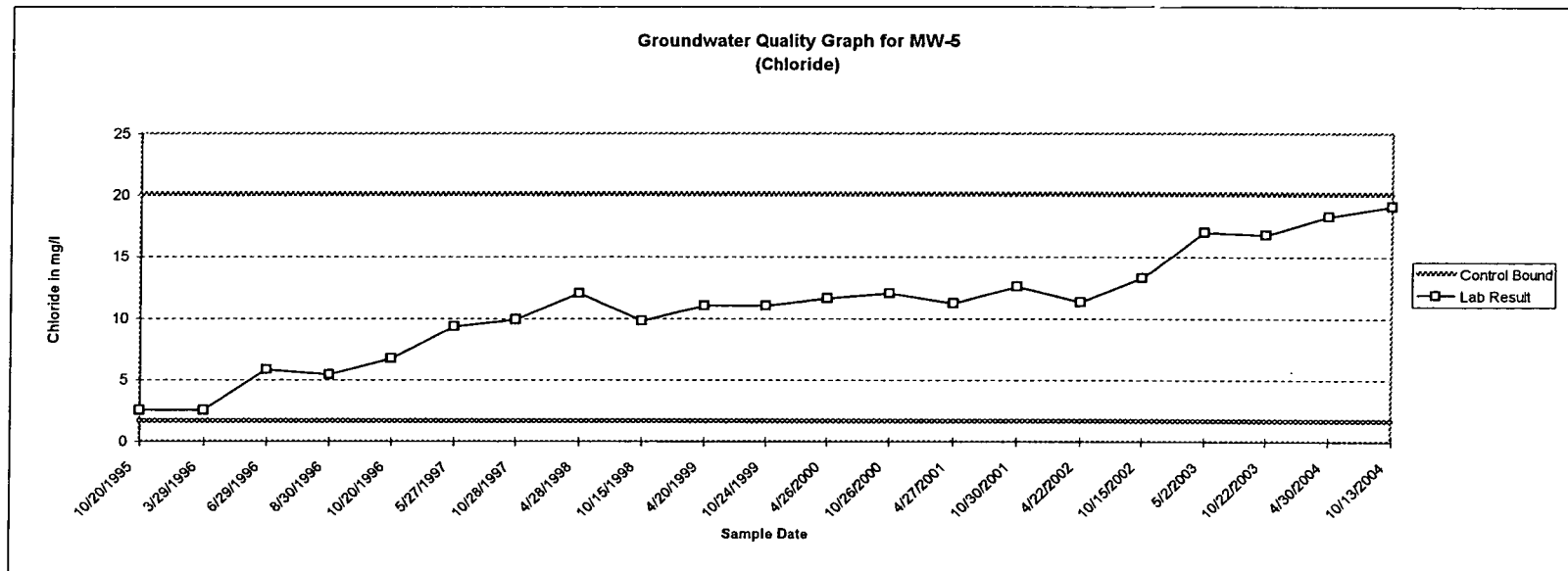
#### NOTE:

- 1) Results shown in bold represent one-half of the laboratory detection limit (MDL) [for parameters reported below the MDL].
- 2) One-half of the MDL was used for parameters reported at concentrations below their respective MDL to compute their respective control limits (mean +/- two times the standard deviation for the chemicals observed at MW-5).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.
- 4) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 5) Results from Monitoring Well MW-5 were used to compute control limits - considered up-gradient well

# ANALYSIS SHEET MW-5

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



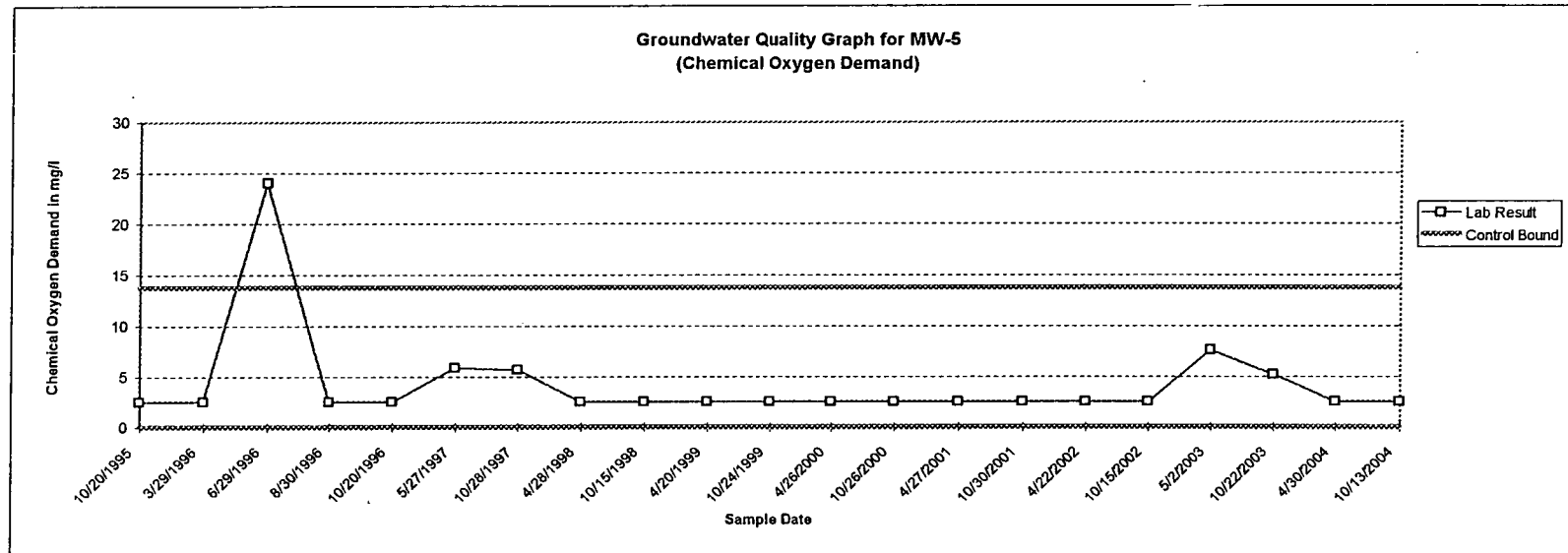
**NOTE:**

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered up-gradient well
- 2) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

# ANALYSIS SHEET MW-5

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



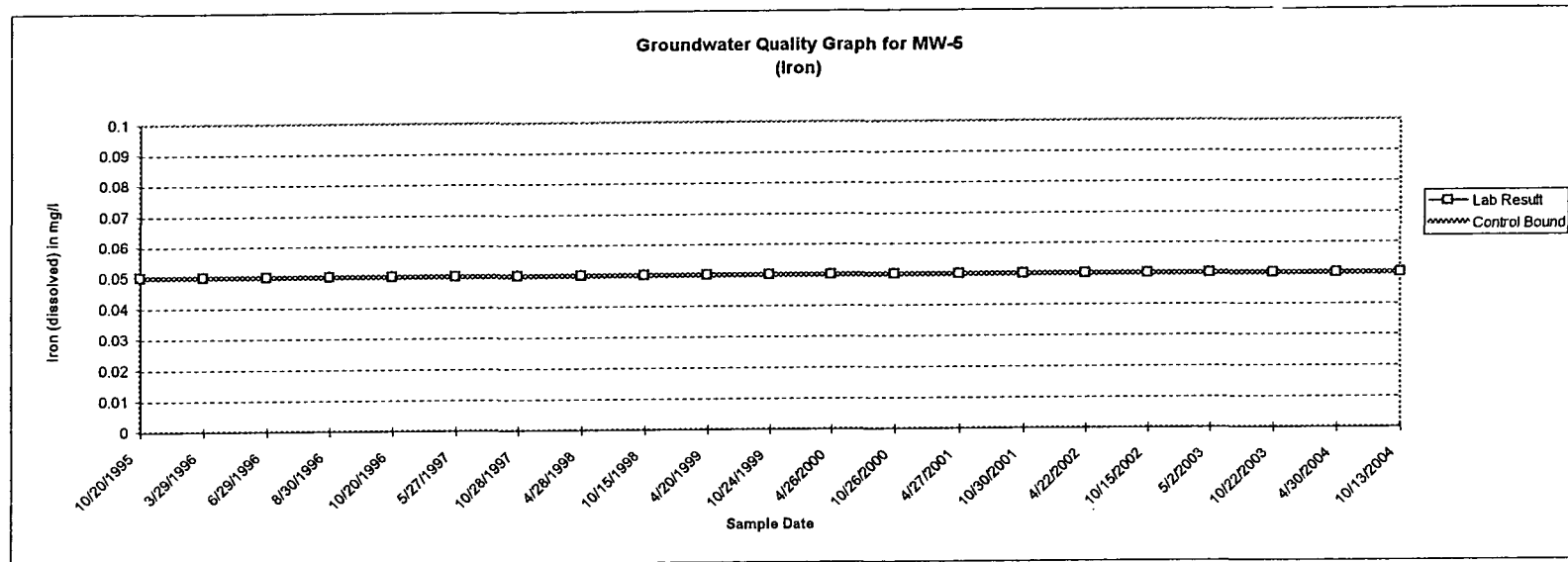
**NOTE:**

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered up gradient well
- 2) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-5

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



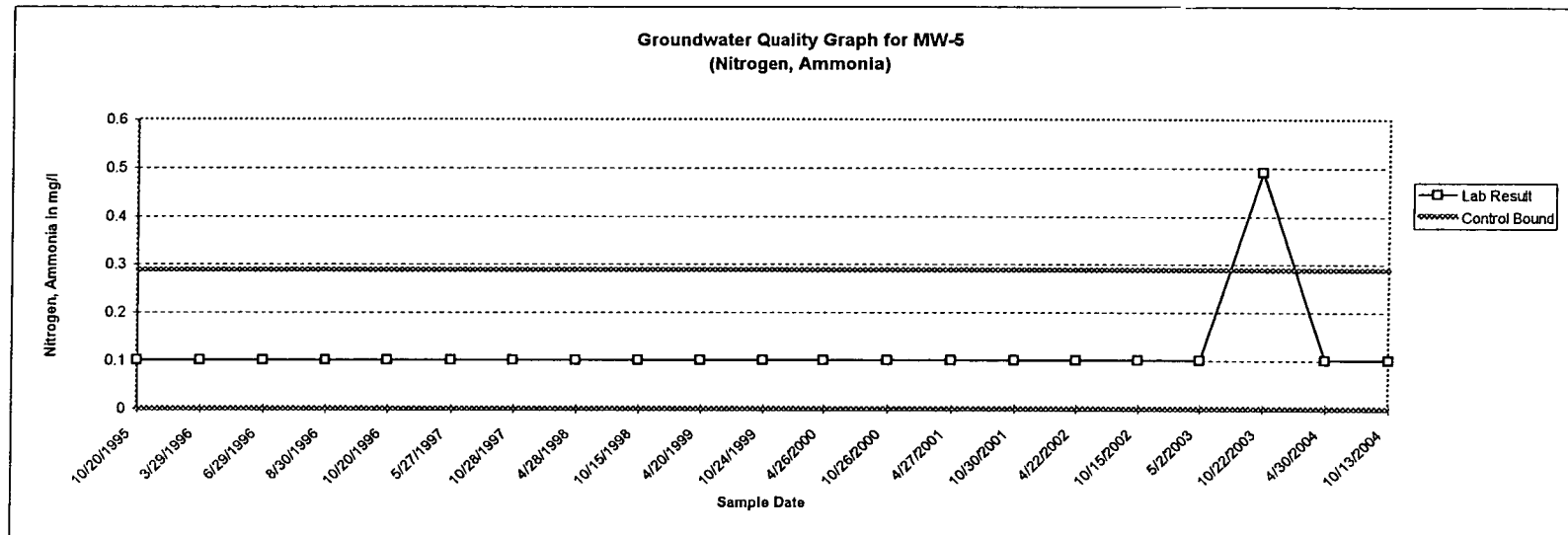
NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MW-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-5

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



NOTE:

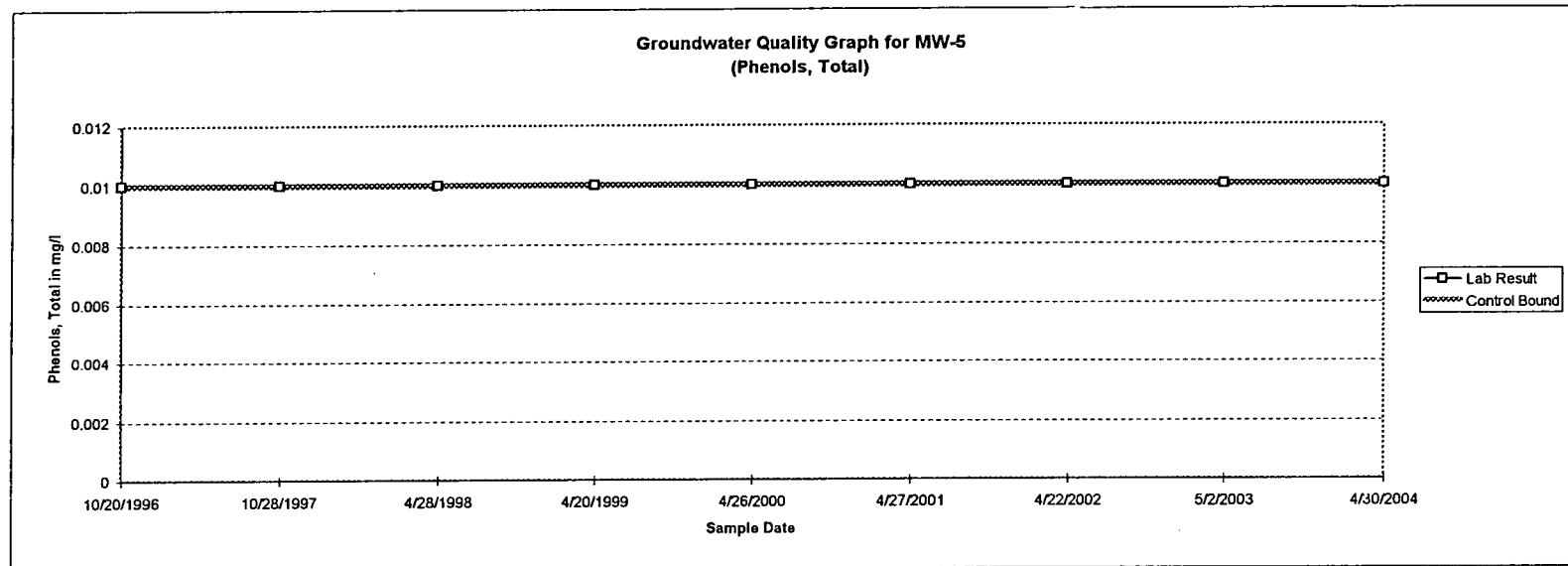
- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.



ANALYSIS SHEET MW-5

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



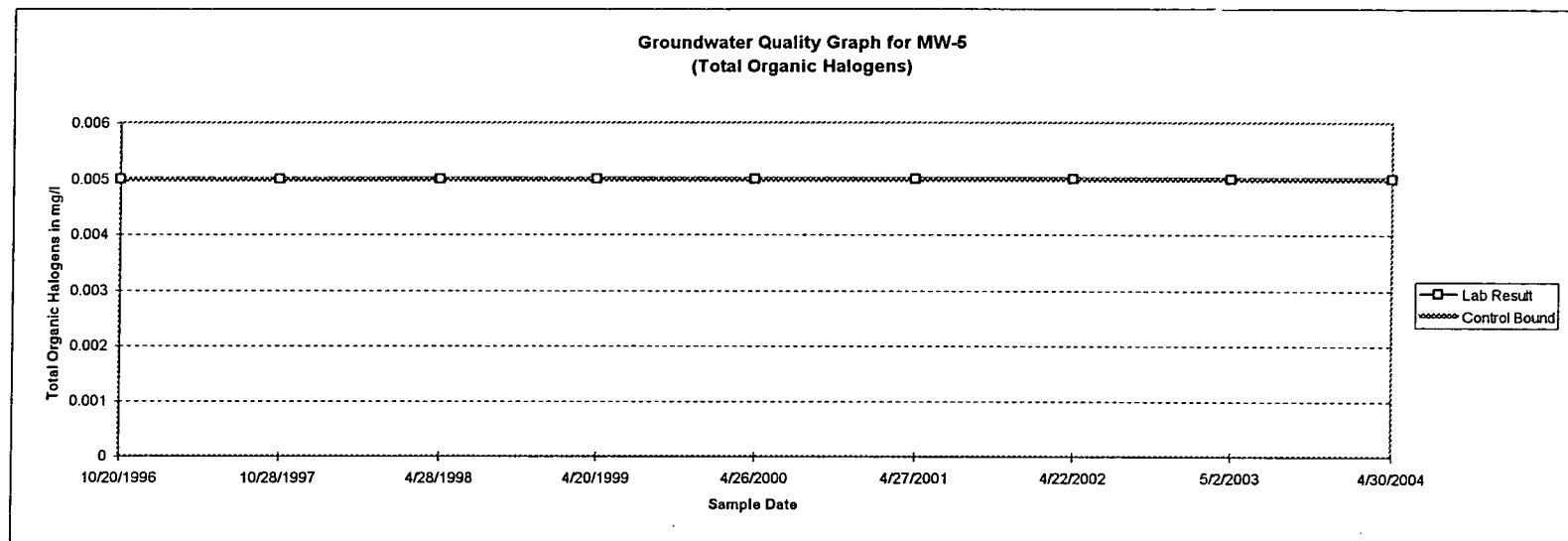
NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MW-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-5

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



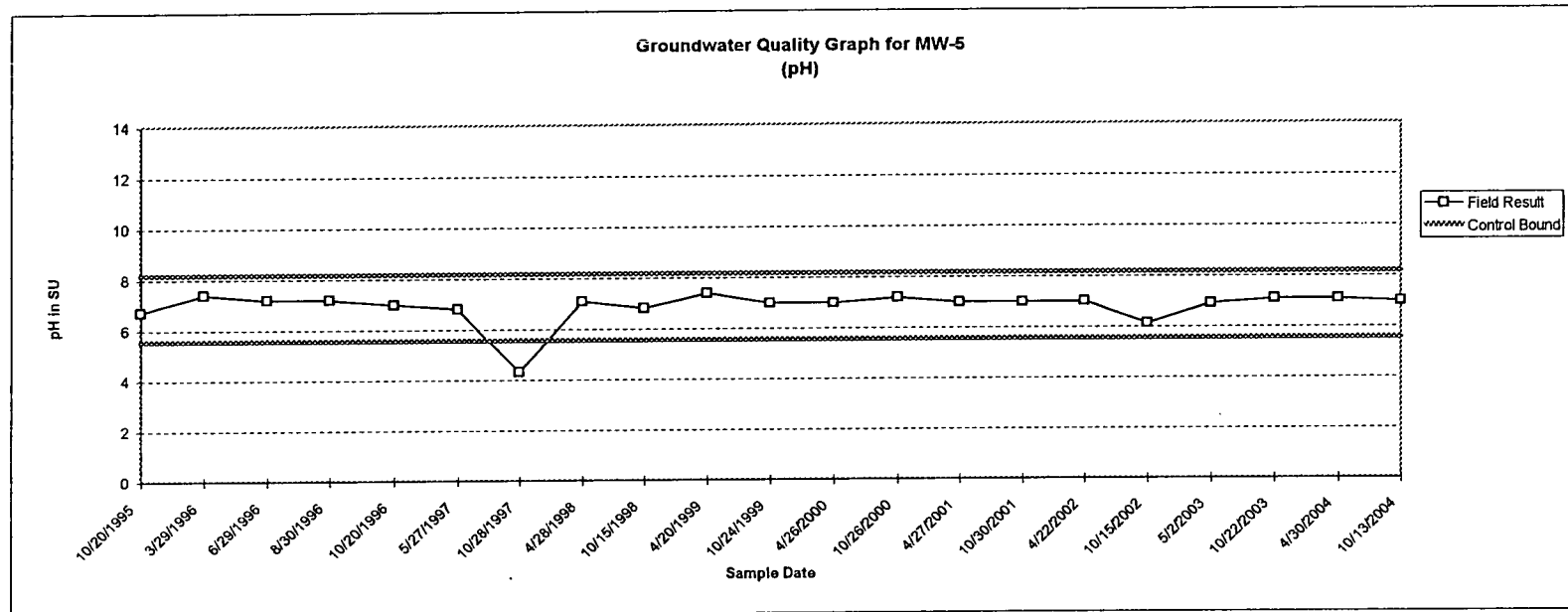
NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MW-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-5

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



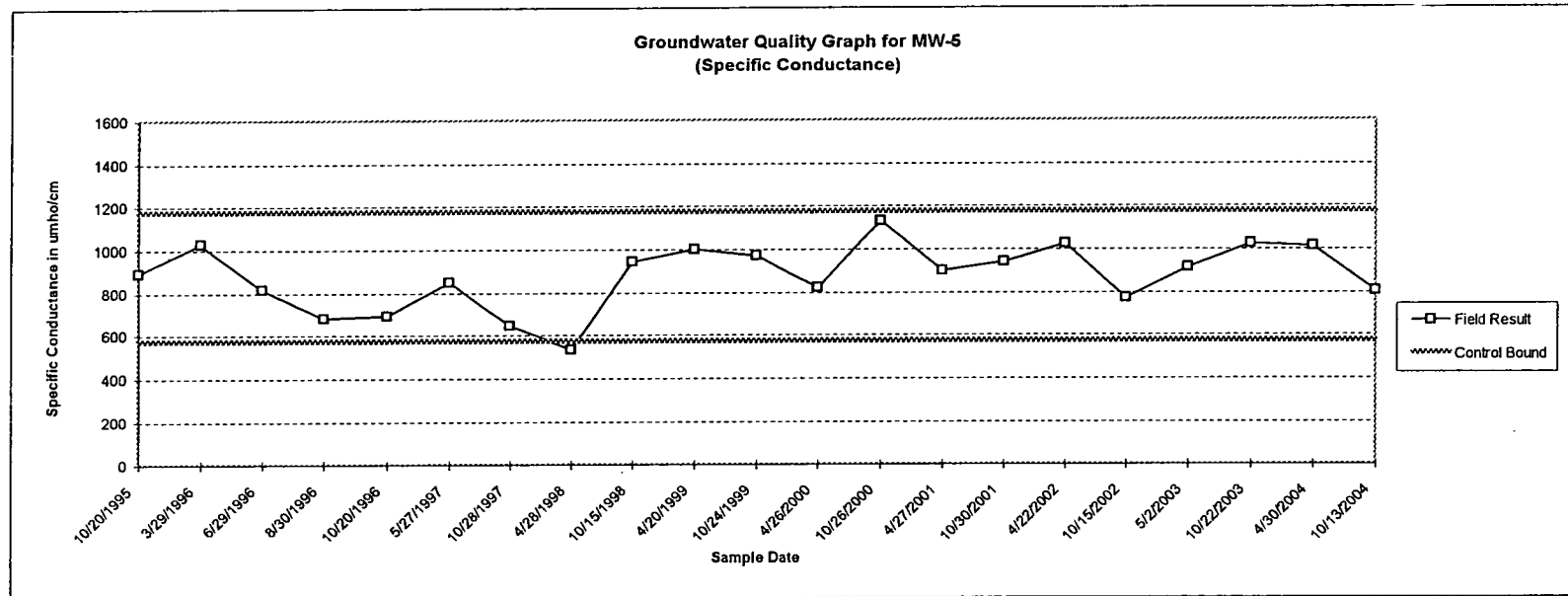
NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.

# ANALYSIS SHEET MW-5

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



**NOTE:**

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.

## ANALYSIS SHEET MW-4

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

## SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

SAMPLE LOCATION NO. MW-4 (Down-gradient)

ANALYSIS PERFORMED BY: TEST AMERICA INC.

SAMPLED BY: TERRACON

PARAMETER	Statistical Considerations				SAMPLE DATE												
	Upper Control Limit via MW-5	Lower Control Limit via MW-5	MW-4 Standard Deviation	MW-4 Mean	10/20/1995	3/29/1996	6/29/1996	8/30/1996	10/20/1996	5/27/1997	10/28/1997	4/28/1998	10/15/1998	4/20/1999	10/24/1999	4/26/2000	10/26/2000
<b>Laboratory Parameters</b>																	
Chloride (mg/l)	20.1	1.68	0.00	2.50	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Chemical Oxygen Demand (mg/l)	13.8	0.00	1.72	2.99	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Iron, dissolved (mg/l)	0.05	0.05	0.02	0.05	0.05	0.05	0.13	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Nitrogen, Ammonia (mg/l)	0.29	0.00	0.12	0.13	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Phenols, total (mg/l)	0.01	0.01	0.00	0.01	-	-	-	-	0.01	-	0.01	0.01	-	0.01	-	0.01	-
Total Organic Halogens (mg/l)	0.005	0.005	0.000	0.005	-	-	-	-	0.005	-	0.005	0.005	-	0.005	-	0.005	-
<b>Field Parameters</b>																	
pH (SU)	8.17	5.58	0.39	7.00	7.6	7.7	7.30	7.1	7.1	6.8	7.4	6.8	6.8	6.6	6.8	7.1	7.2
Specific Conductance (umho/cm)	1175	575	158	754	764	823	811	512	540	630	554	570	793	900	871	735	1118

## NOTE:

- Results shown in bold represent one-half of the laboratory detection limit (MDL) (for parameters reported below the MDL).
- One-half of the MDL was used for parameters reported at concentrations below their respective MDL to compute their respective control limits (mean +/- two times the standard deviation for the chemicals observed at MW-5).
- One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.
- A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- Results from Monitoring Well MW-5 were used to compute control limits - considered up-gradient well

# ANALYSIS SHEET MW-4

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

SAMPLE LOCATION NO. MW-4 (Down-gradient)

ANALYSIS PERFORMED BY: TEST AMERICA INC.

SAMPLED BY: TERRACON

PARAMETER	Statistical Considerations				SAMPLE DATE							
	Upper Control Limit via MW-5	Lower Control Limit via MW-5	MW-4 Standard Deviation	MW-4 Mean	4/27/2001	10/30/2001	4/22/2002	10/15/2002	5/2/2003	10/22/2003	4/30/2004	10/13/2004
<b>Laboratory Parameters</b>												
Chloride (mg/l)	20.1	1.68	0.00	2.50	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Chemical Oxygen Demand (mg/l)	13.8	0.00	1.72	2.99	2.5	2.5	2.5	2.5	10	2.5	2.5	5.3
Iron, dissolved (mg/l)	0.05	0.05	0.02	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Nitrogen, Ammonia (mg/l)	0.29	0.00	0.12	0.13	0.1	0.1	0.1	0.1	0.2	0.66	0.1	0.1
Phenols, total (mg/l)	0.01	0.01	0.00	0.01	0.01	-	0.01	-	0.01	-	0.01	-
Total Organic Halogens (mg/l)	0.005	0.005	0.000	0.005	0.005	-	0.005	-	0.005	-	0.005	-
<b>Field Parameters</b>												
pH (SU)	8.17	5.58	0.39	7.00	7.0	7.1	6.8	6.0	6.8	7.0	7	7.2
Specific Conductance (umho/cm)	1175	575	158	754	780	782	986	607	778	772	875	691

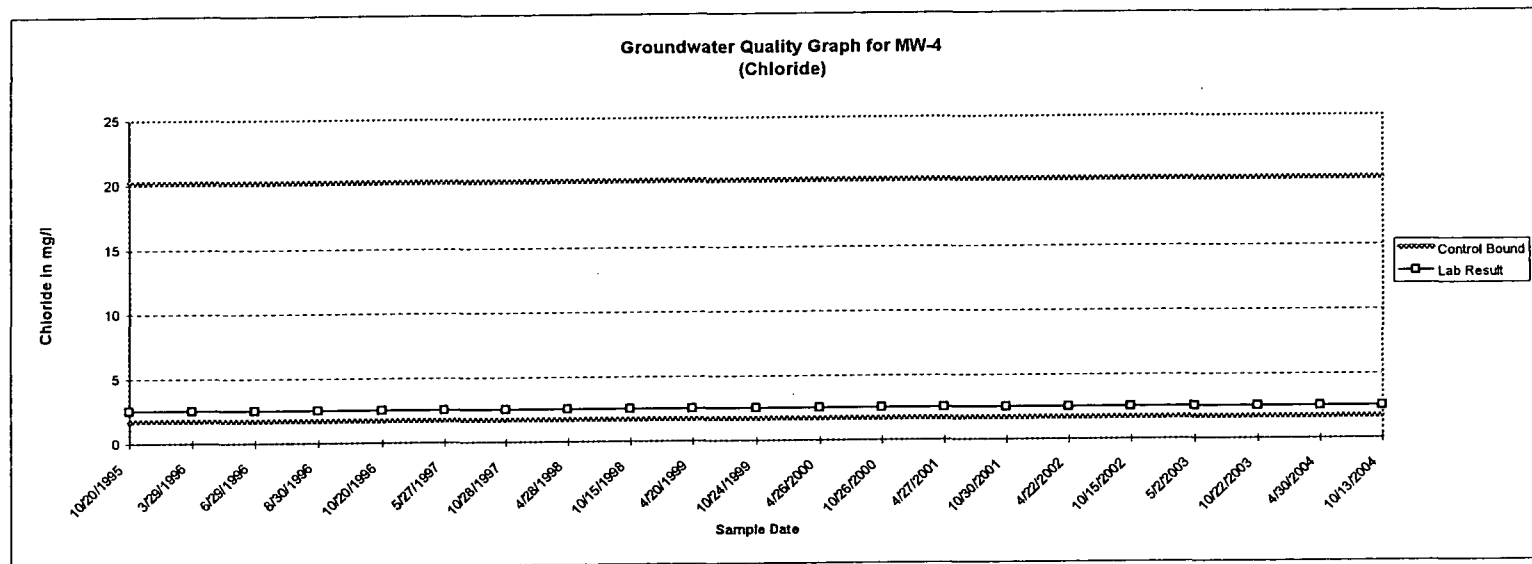
#### NOTE:

- 1) Results shown in bold represent one-half of the laboratory detection limit (MDL) [for parameters reported below the MDL].
- 2) One-half of the MDL was used for parameters reported at concentrations below their respective MDL to compute their respective control limits (mean +/- two times the standard deviation for the chemicals observed at MW-5).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.
- 4) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 5) Results from Monitoring Well MW-5 were used to compute control limits - considered up-gradient well

ANALYSIS SHEET MW-4

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



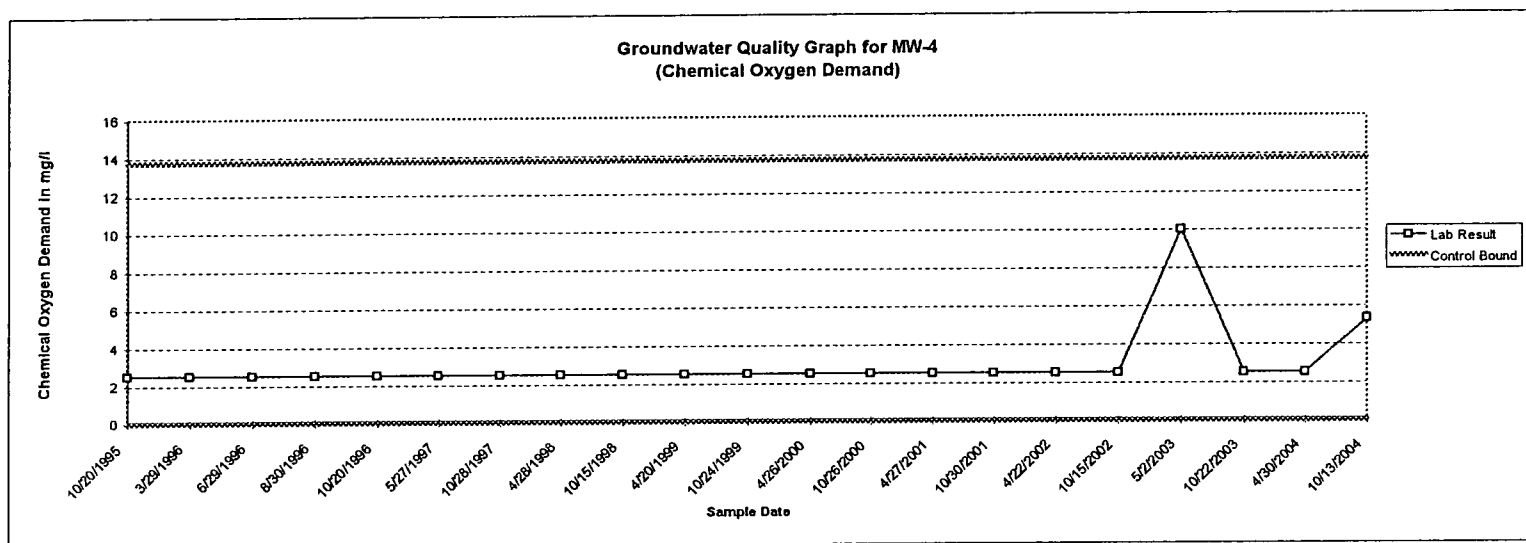
NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered up-gradient well
- 2) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

# ANALYSIS SHEET MW-4

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



#### NOTE:

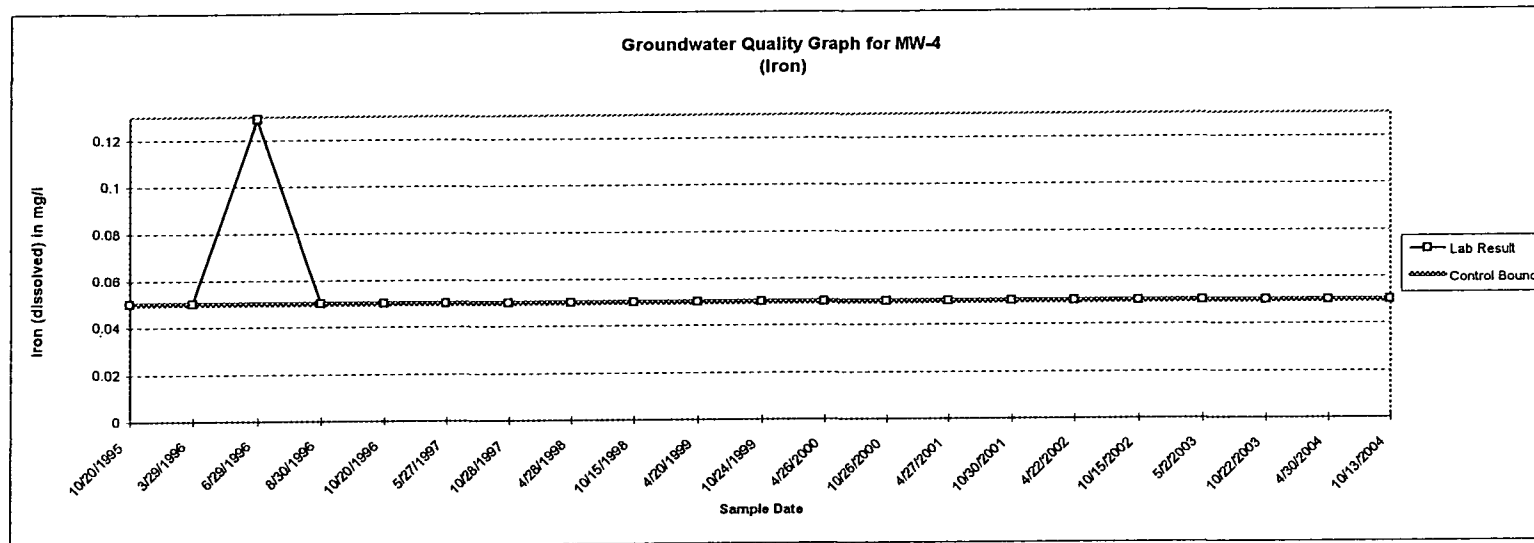
- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered up gradient well
- 2) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.



# ANALYSIS SHEET MW-4

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



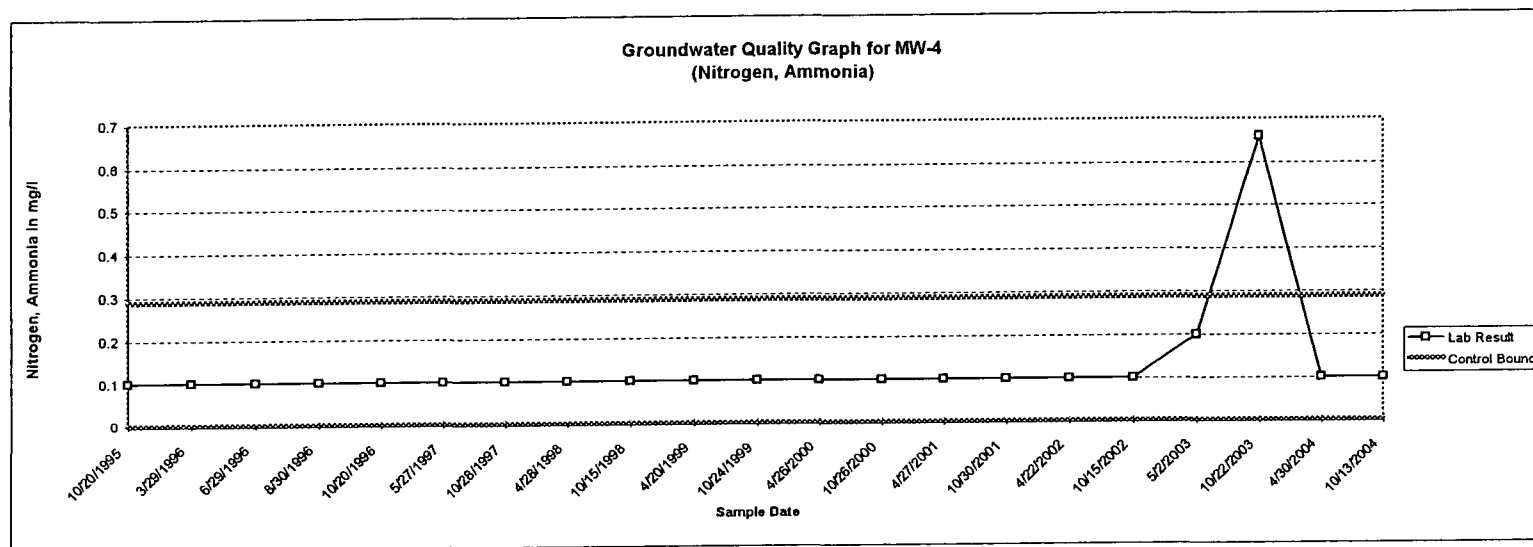
#### NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MW-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

# ANALYSIS SHEET MW-4

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



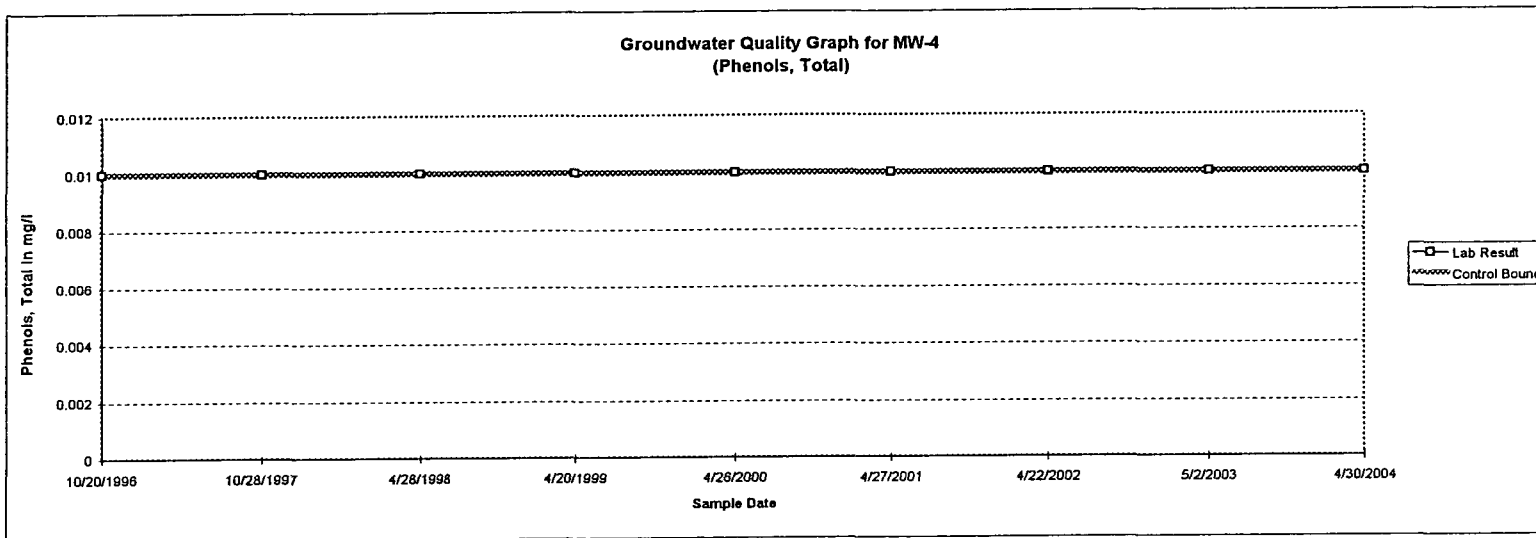
#### NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-4

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

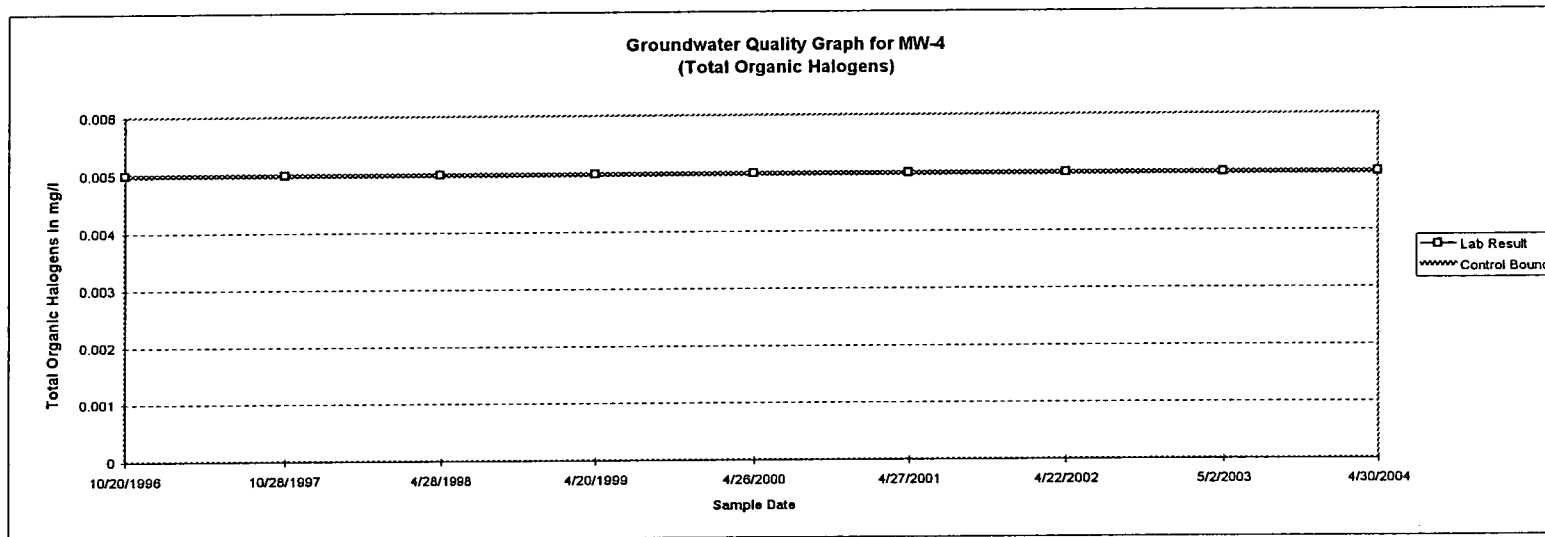


NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MW-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-4  
MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



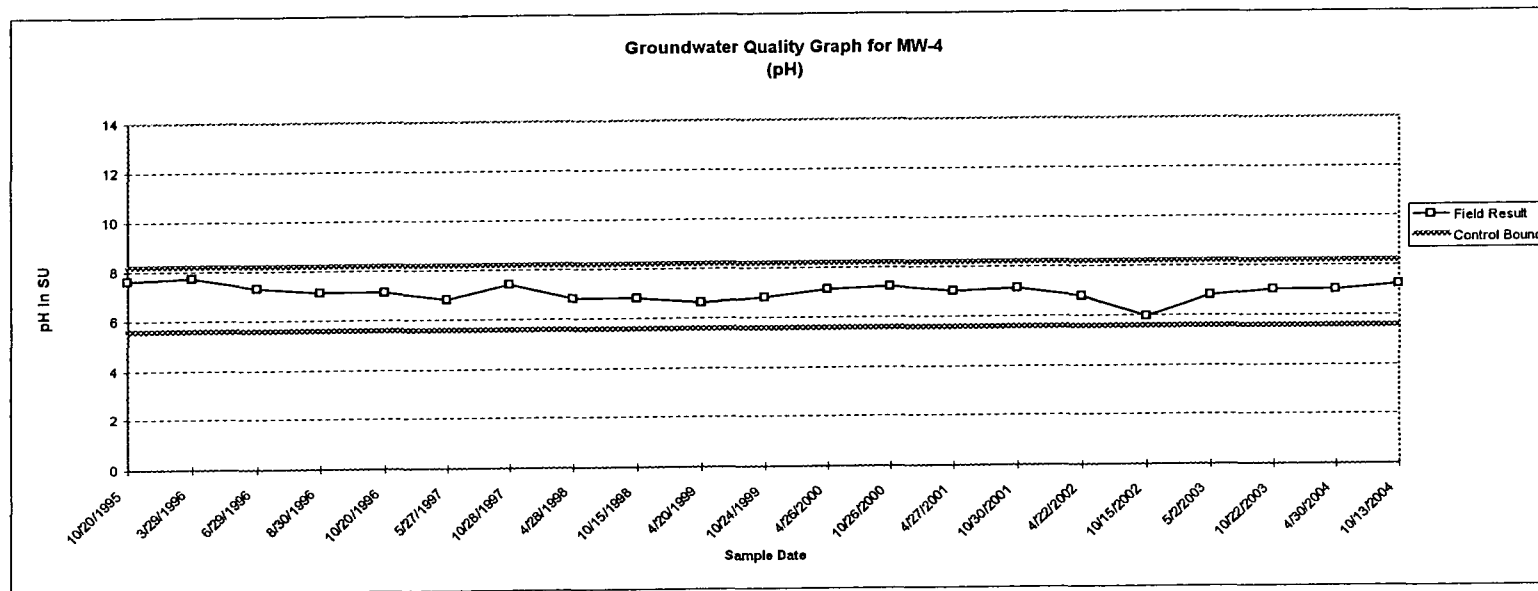
NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MW-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-4

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



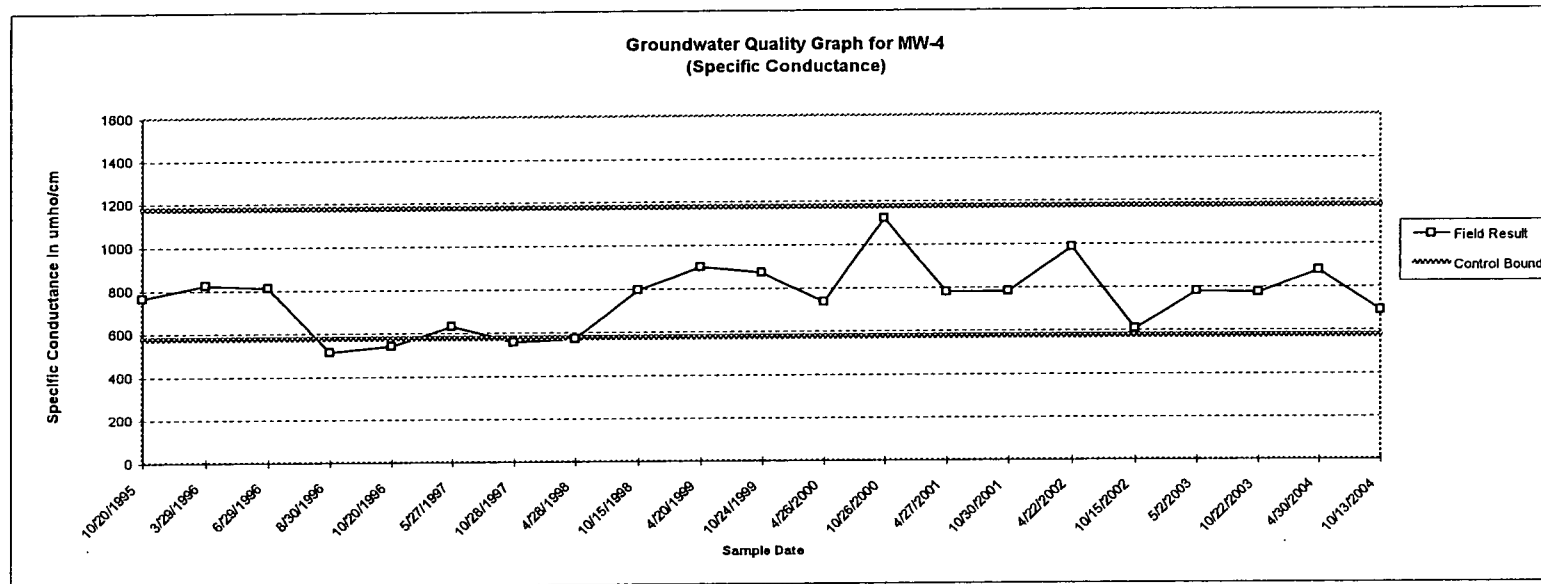
NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.

# ANALYSIS SHEET MW-4

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



#### NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.

## ANALYSIS SHEET MW-3

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

## SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

SAMPLE LOCATION NO. MW-3 (Down-gradient)

ANALYSIS PERFORMED BY: TEST AMERICA INC.

SAMPLED BY: TERRACON

PARAMETER	Statistical Considerations				SAMPLE DATE												
	Upper Control Limit via MW-5	Lower Control Limit via MW-5	MW-3 Standard Deviation	MW-3 Mean	10/20/1995	3/29/1996	6/29/1996	8/30/1996	10/20/1996	5/27/1997	10/28/1997	4/28/1998	10/15/1998	4/20/1999	10/24/1999	4/26/2000	10/26/2000
<b>Laboratory Parameters</b>																	
Chloride (mg/l)	20.1	1.68	0.55	2.62	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Chemical Oxygen Demand (mg/l)	13.8	0.00	0.00	2.50	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Iron, dissolved (mg/l)	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Nitrogen, Ammonia (mg/l)	0.29	0.00	0.03	0.11	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.1	0.1	0.1	0.1
Phenols, total (mg/l)	0.01	0.01	0.00	0.01	-	-	-	-	0.01	-	0.01	0.01	-	0.01	-	0.01	-
Total Organic Halogens (mg/l)	0.005	0.005	0.000	0.005	-	-	-	-	0.005	-	0.005	0.005	-	0.005	-	0.005	-
<b>Field Parameters</b>																	
pH (SU)	8.17	5.58	0.32	7.05	6.9	7.9	7.20	7.1	7.1	7.0	7.0	7.1	6.7	7.4	6.9	7.1	7.2
Specific Conductance (umho/cm)	1175	575	120	771	883	957	760	670	627	711	564	612	832	900	801	714	1022

## NOTE:

- 1) Results shown in bold represent one-half of the laboratory detection limit (MDL) [for parameters reported below the MDL].
- 2) One-half of the MDL was used for parameters reported at concentrations below their respective MDL to compute their respective control limits (mean +/- two times the standard deviation for the chemicals observed at MW-5).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.
- 4) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 5) Results from Monitoring Well MW-5 were used to compute control limits - considered up-gradient well

## ANALYSIS SHEET MW-3

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

## SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

SAMPLE LOCATION NO. MW-3 (Down-gradient)

ANALYSIS PERFORMED BY: TEST AMERICA INC.

SAMPLED BY: TERRACON

PARAMETER	Statistical Considerations				SAMPLE DATE							
	Upper Control Limit via MW-5	Lower Control Limit via MW-5	MW-3 Standard Deviation	MW-3 Mean	4/27/2001	10/30/2001	4/22/2002	10/15/2002	5/2/2003	10/22/2003	4/30/2004	10/13/2004
<b>Laboratory Parameters</b>												
Chloride (mg/l)	20.1	1.68	0.55	2.62	2.5	2.5	2.5	2.5	5.0	2.5	2.5	2.5
Chemical Oxygen Demand (mg/l)	13.8	0.00	0.00	2.50	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Iron, dissolved (mg/l)	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Nitrogen, Ammonia (mg/l)	0.29	0.00	0.03	0.11	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Phenols, total (mg/l)	0.01	0.01	0.00	0.01	0.01	-	0.01	-	0.01	-	0.01	-
Total Organic Halogens (mg/l)	0.005	0.005	0.000	0.005	0.005	-	0.005	-	0.005	-	0.005	-
<b>Field Parameters</b>												
pH (SU)	8.17	5.58	0.32	7.05	6.9	7.1	7.0	6.1	7.0	7.0	7.1	7.3
Specific Conductance (umho/cm)	1175	575	120	771	752	843	808	602	805	811	832	686

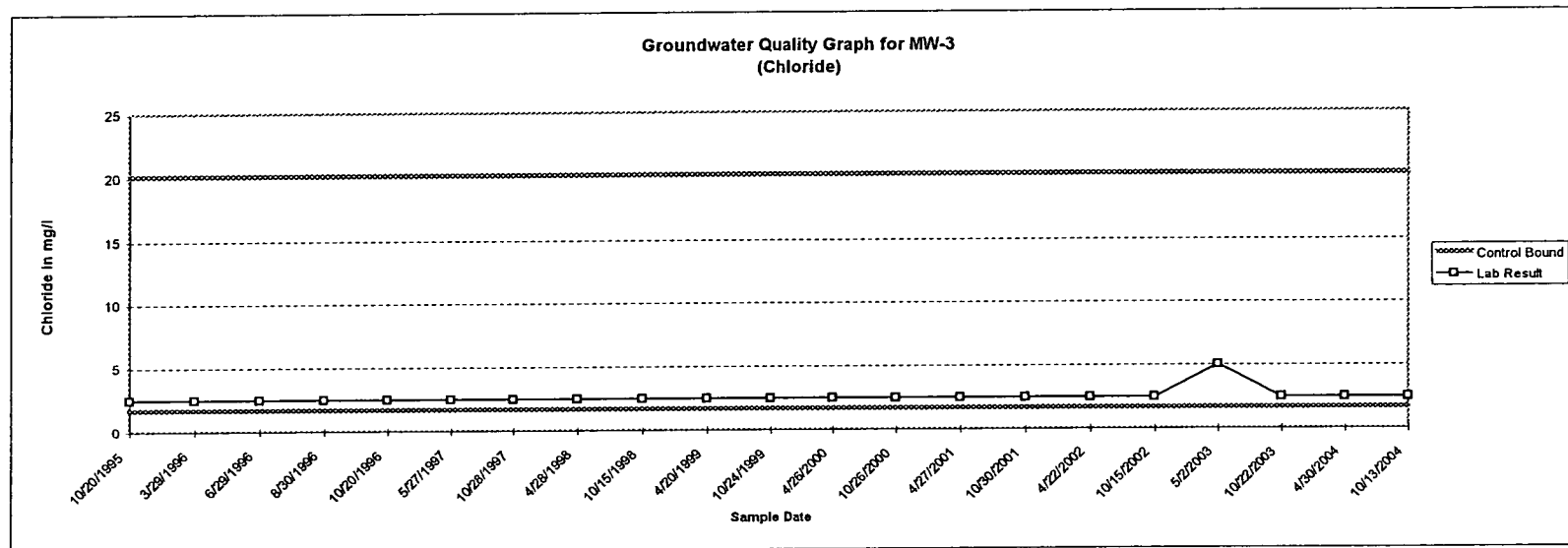
## NOTE:

- 1) Results shown in bold represent one-half of the laboratory detection limit (MDL) [for parameters reported below the MDL].
- 2) One-half of the MDL was used for parameters reported at concentrations below their respective MDL to compute their respective control limits (mean +/- two times the standard deviation for the chemicals observed at MW-5).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.
- 4) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 5) Results from Monitoring Well MW-5 were used to compute control limits - considered up-gradient well



ANALYSIS SHEET MW-3  
MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



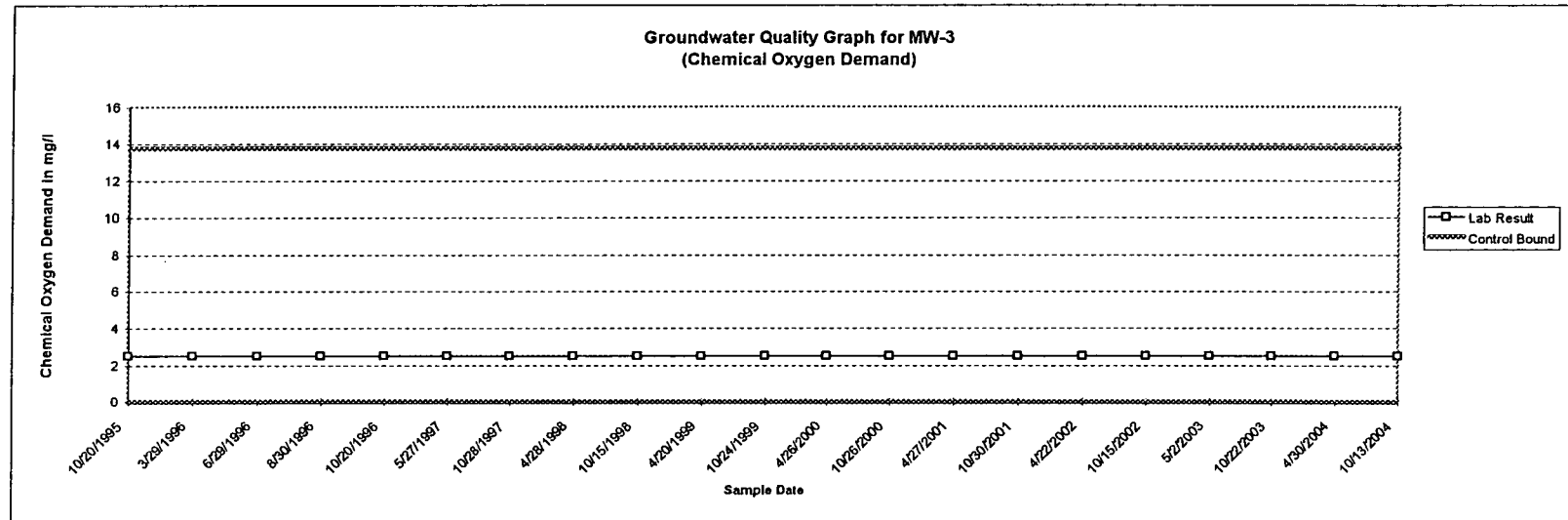
NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered up-gradient well
- 2) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-3

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



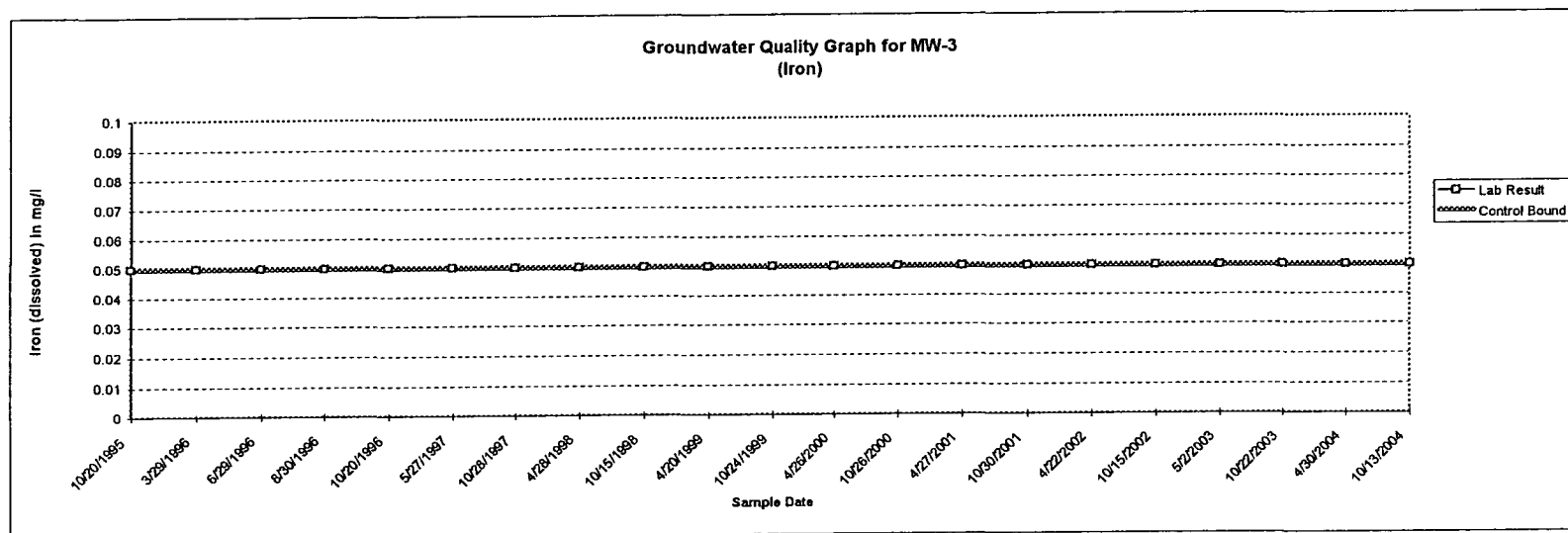
NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered up gradient well
- 2) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

# ANALYSIS SHEET MW-3

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

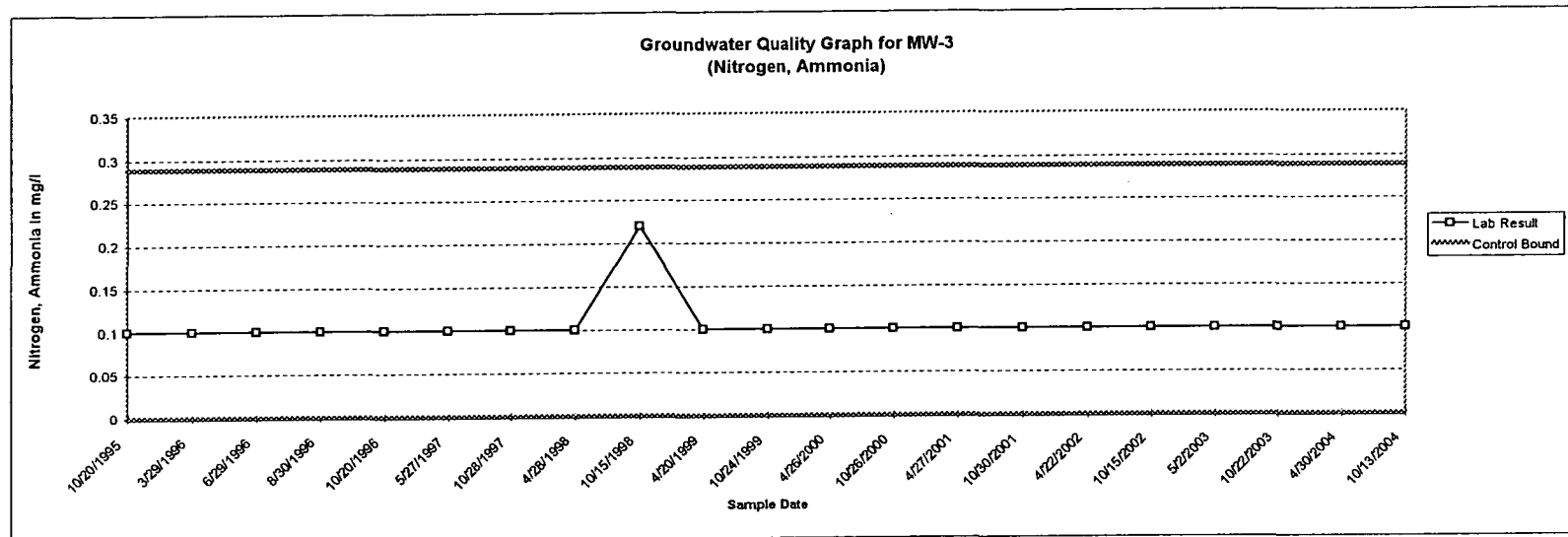


#### NOTE:

- 1) Results from Monitoring Well MWV-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MWV-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-3  
MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



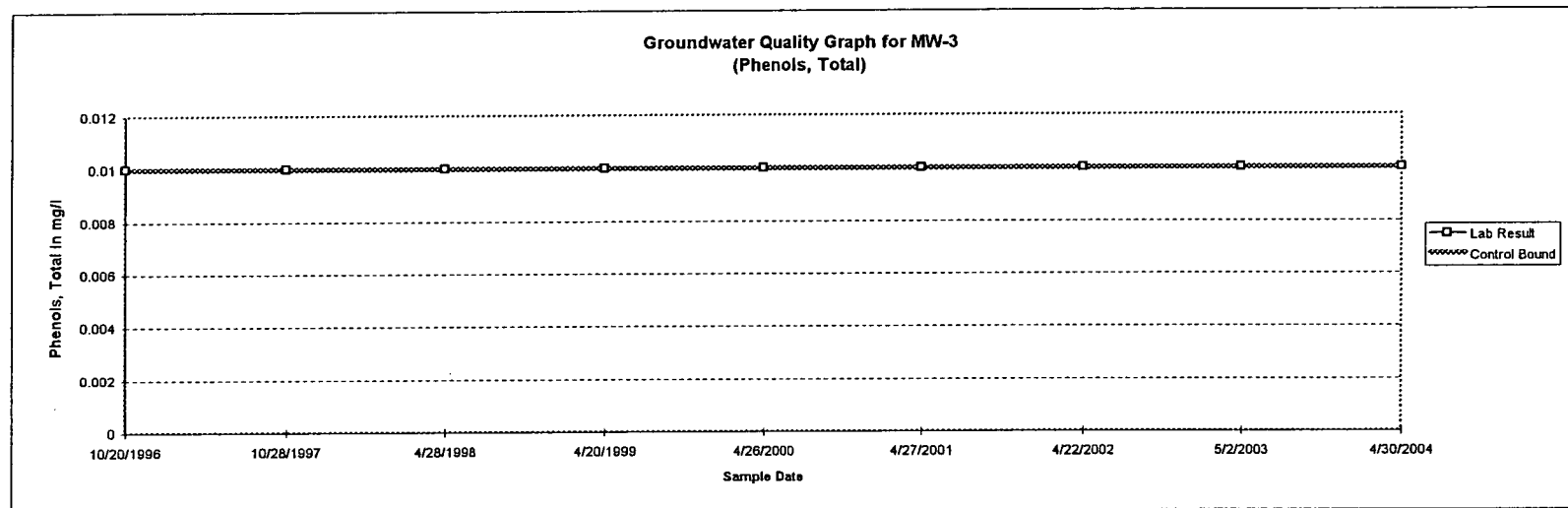
NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-3

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



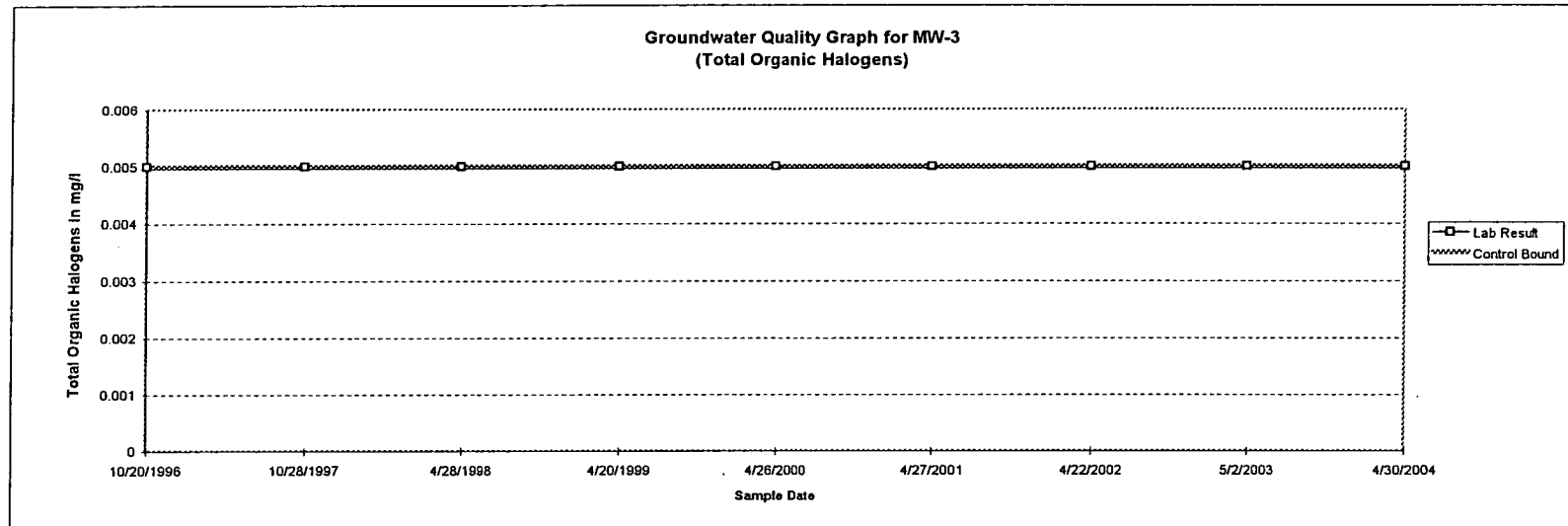
NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MW-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-3

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



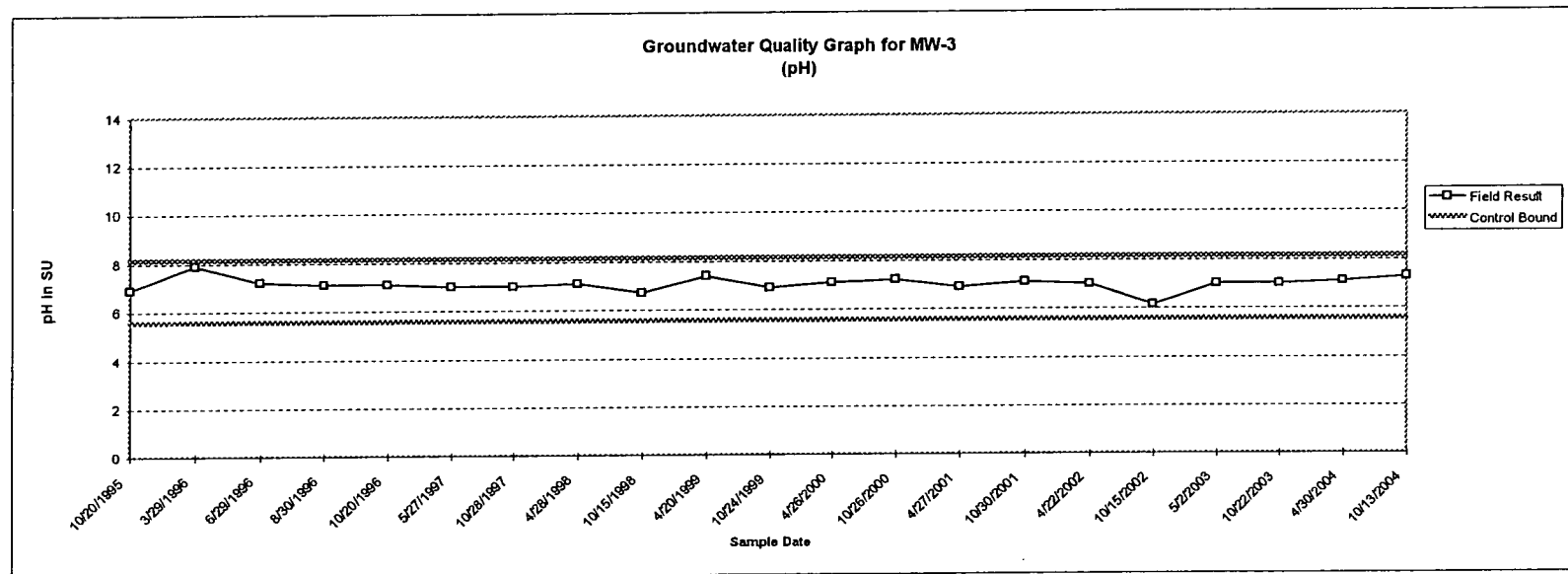
NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MW-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

# ANALYSIS SHEET MW-3

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



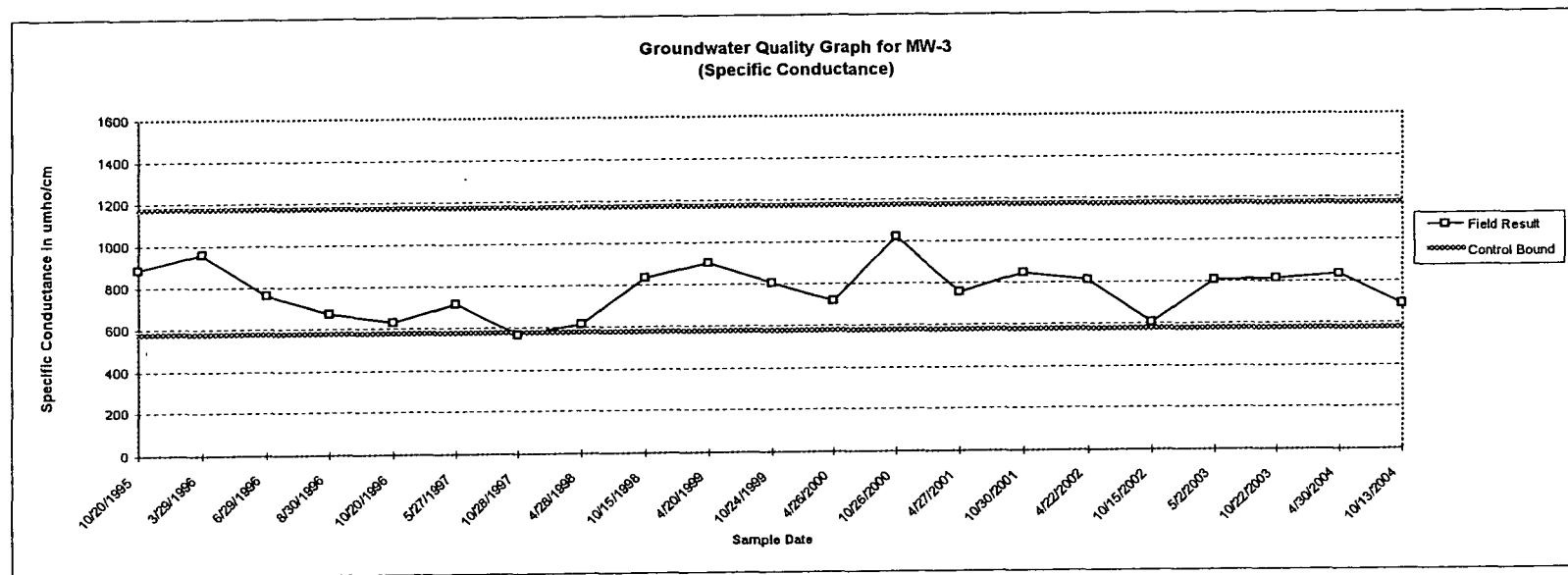
**NOTE:**

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.

ANALYSIS SHEET MW-3

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.



## ANALYSIS SHEET MW-2

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

## SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

SAMPLE LOCATION NO. MW-2 (Down-gradient)

ANALYSIS PERFORMED BY: TEST AMERICA INC.

SAMPLED BY: TERRACON

PARAMETER	Statistical Considerations				SAMPLE DATE												
	Upper Control Limit via MW-5	Lower Control Limit via MW-5	MW-2 Standard Deviation	MW-2 Mean	10/20/1995	3/29/1996	6/29/1996	8/30/1996	10/20/1996	5/27/1997	10/28/1997	4/28/1998	10/15/1998	4/20/1999	10/24/1999	4/26/2000	10/27/2000
<b>Laboratory Parameters</b>																	
Chloride (mg/l)	20.1	1.68	22.6	34.2	54.0	2.5	2.5	2.5	62	62	51	47	60	76	54	46.4	38
Chemical Oxygen Demand (mg/l)	13.8	0.00	11.70	8.42	9.3	7.5	20	10	7.6	2.5	7.6	2.5	2.5	2.5	5.7	7.1	2.5
Iron, dissolved (mg/l)	0.05	0.05	0.27	0.15	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.72	0.96	0.05
Nitrogen, Ammonia (mg/l)	0.29	0.00	0.05	0.11	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.31	0.1	0.1	0.1	0.1
Phenols, total (mg/l)	0.01	0.01	0.00	0.01	-	-	-	-	0.01	-	0.01	0.01	-	0.01	-	0.01	-
Total Organic Halogens (mg/l)	0.005	0.005	0.025	0.028	-	-	-	-	0.089	-	0.029	0.03	-	0.036	-	0.023	-
<b>Field Parameters</b>																	
pH (SU)	8.17	5.58	0.37	6.79	6.9	7.9	7.20	7.1	6.8	6.2	6.7	6.8	6.2	6.6	6.6	7.1	6.8
Specific Conductance (umho/cm)	1175	575	384	1255	883	957	760	670	1147	1204	1030	1173	1625	2100	1434	735	1922

## NOTE:

- Results shown in bold represent one-half of the laboratory detection limit (MDL) [for parameters reported below the MDL].
- One-half of the MDL was used for parameters reported at concentrations below their respective MDL to compute their respective control limits (mean +/- two times the standard deviation for the chemicals observed at MW-5).
- One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.
- A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- Results from Monitoring Well MW-5 were used to compute control limits - considered up-gradient well

## ANALYSIS SHEET MW-2

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

## SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

SAMPLE LOCATION NO. MW-2 (Down-gradient)

ANALYSIS PERFORMED BY: TEST AMERICA INC.

SAMPLED BY: TERRACON

PARAMETER	Statistical Considerations				SAMPLE DATE							
	Upper Control Limit via MW-5	Lower Control Limit via MW-5	MW-2 Standard Deviation	MW-2 Mean	4/27/2001	10/30/2001	4/22/2002	10/15/2002	5/2/2003	10/22/2003	4/30/2004	10/13/2004
<b>Laboratory Parameters</b>												
Chloride (mg/l)	20.1	1.68	22.6	34.2	31.1	26.1	20.8	17.4	19.1	15.5	16.0	14.7
Chemical Oxygen Demand (mg/l)	13.8	0.00	11.70	8.42	<b>2.5</b>	<b>2.5</b>	<b>2.5</b>	10	56	7.0	<b>2.5</b>	6.5
Iron, dissolved (mg/l)	0.05	0.05	0.27	0.15	<b>0.05</b>	<b>0.05</b>	<b>0.05</b>	0.65	<b>0.05</b>	<b>0.05</b>	<b>0.05</b>	<b>0.05</b>
Nitrogen, Ammonia (mg/l)	0.29	0.00	0.05	0.11	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>
Phenols, total (mg/l)	0.01	0.01	0.00	0.01	<b>0.01</b>	-	<b>0.01</b>	-	<b>0.01</b>	-	<b>0.01</b>	-
Total Organic Halogens (mg/l)	0.005	0.005	0.025	0.028	0.016	-	0.017	-	<b>0.005</b>	-	0.011	-
<b>Field Parameters</b>												
pH (SU)	8.17	5.58	0.37	6.79	6.7	6.7	6.9	6.6	6.5	6.7	6.6	6.9
Specific Conductance (umho/cm)	1175	575	384	1255	1300	1418	1468	1112	1431	1478	1483	1234

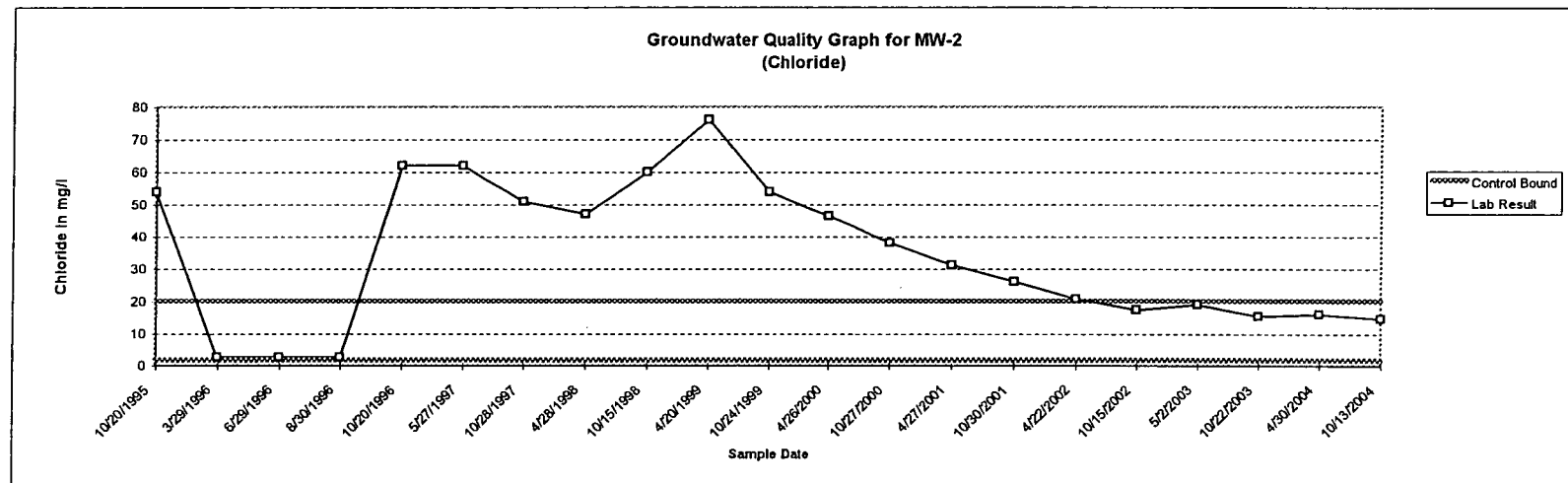
## NOTE:

- 1) Results shown in bold represent one-half of the laboratory detection limit (MDL) [for parameters reported below the MDL].
- 2) One-half of the MDL was used for parameters reported at concentrations below their respective MDL to compute their respective control limits (mean +/- two times the standard deviation for the chemicals observed at MW-5).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.
- 4) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 5) Results from Monitoring Well MW-5 were used to compute control limits - considered up-gradient well

ANALYSIS SHEET MW-2

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



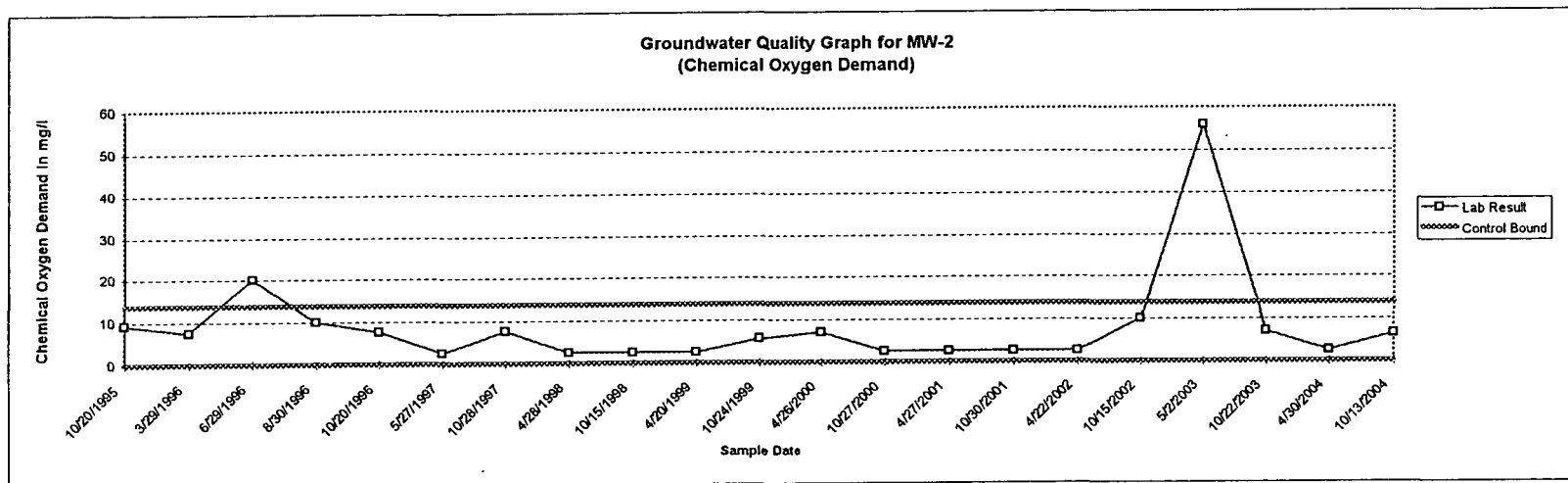
NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

# ANALYSIS SHEET MW-2

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



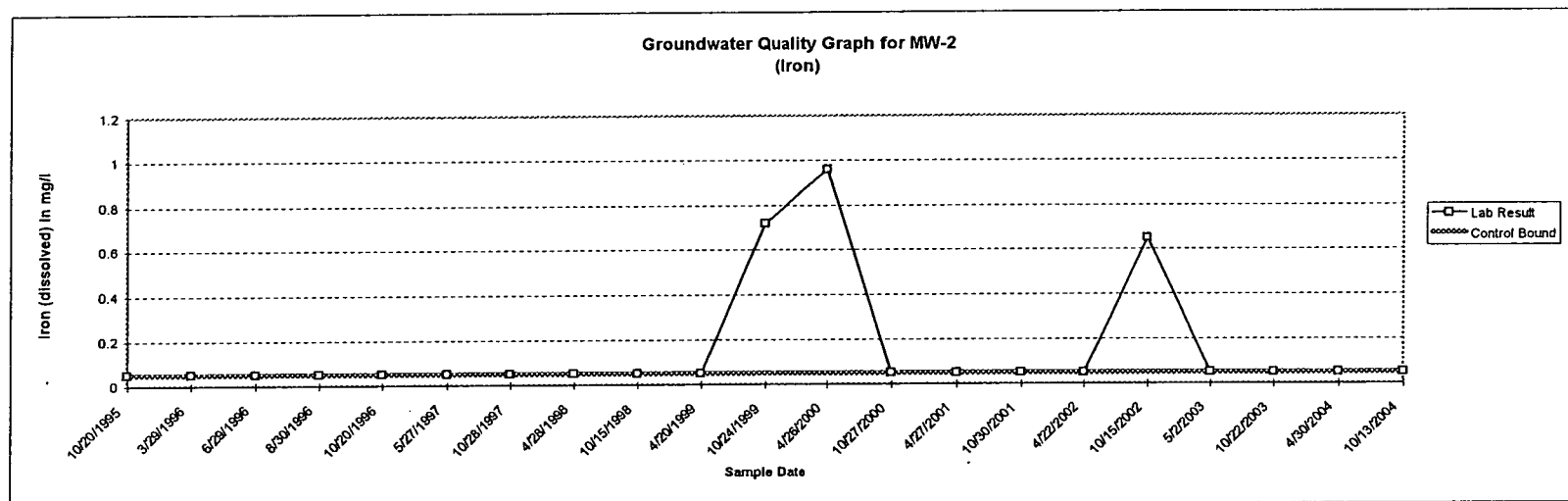
**NOTE:**

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

# ANALYSIS SHEET MW-2

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



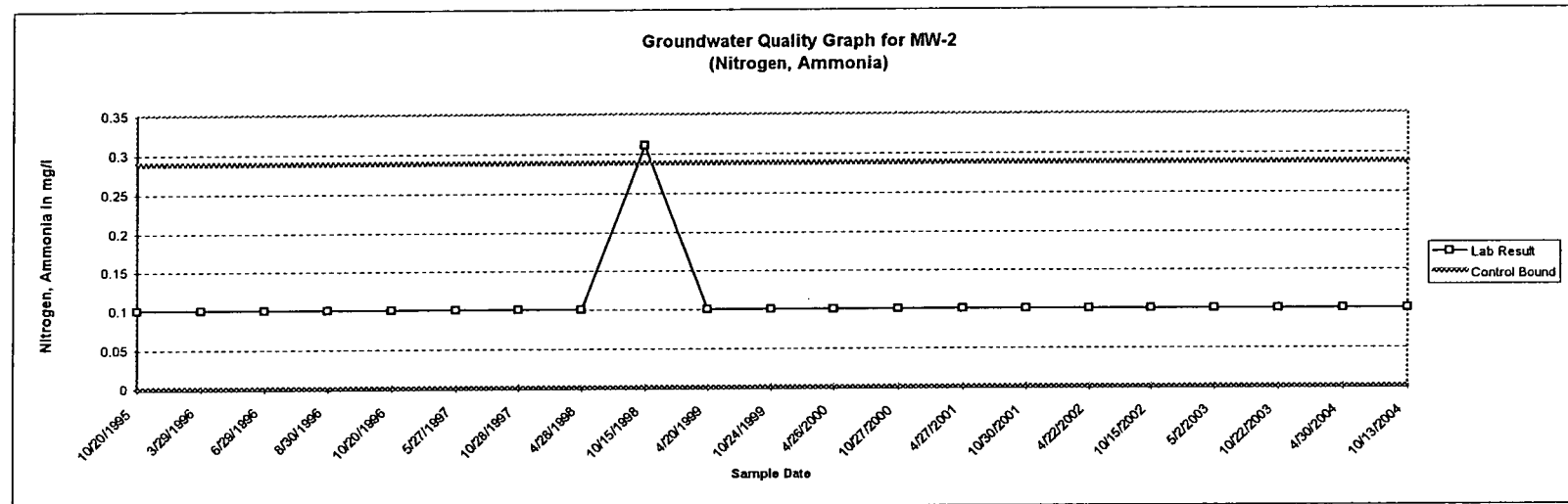
#### NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MW-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

# ANALYSIS SHEET MW-2

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



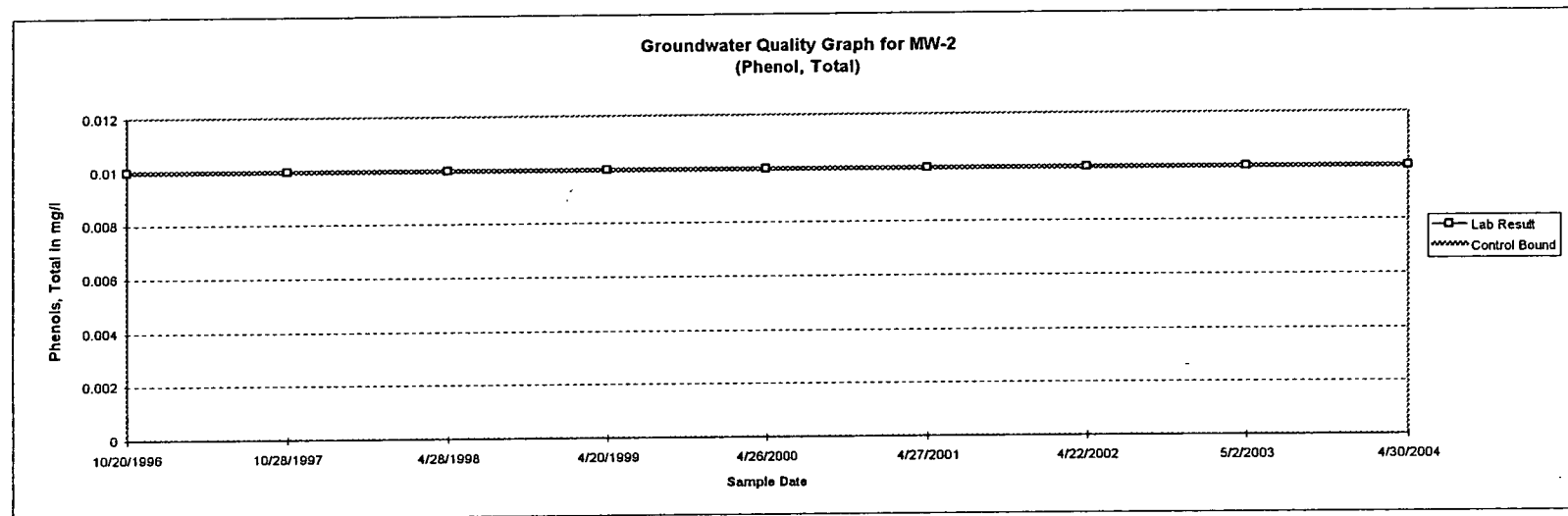
#### NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-2

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

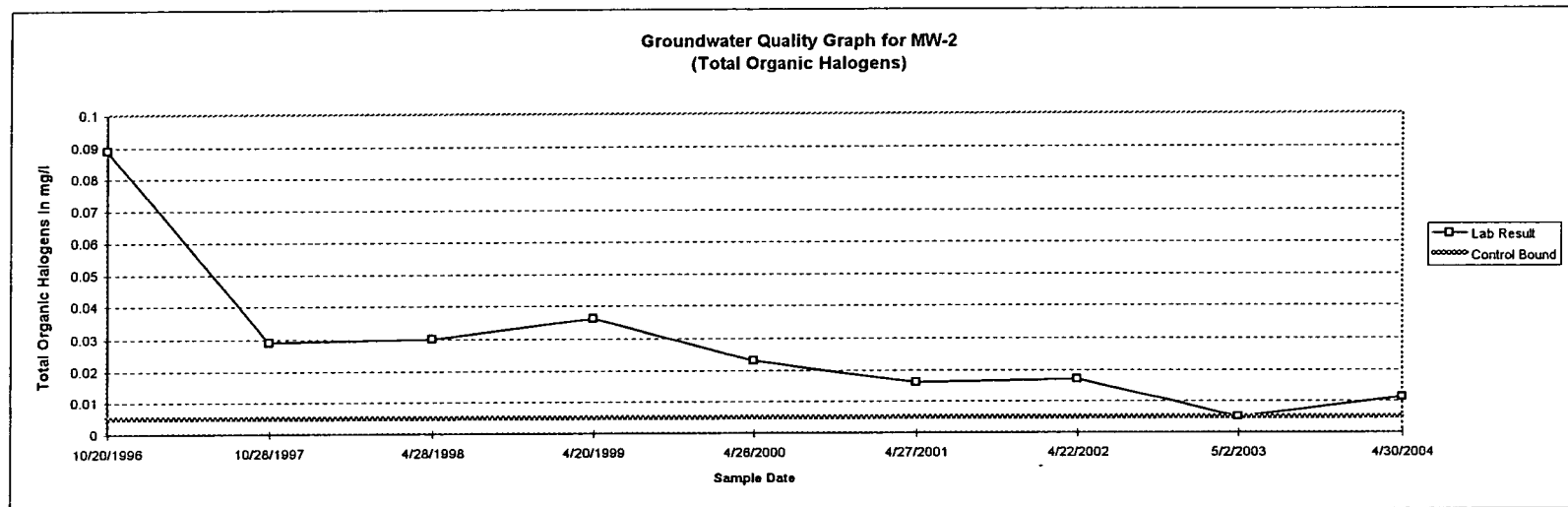


NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MW-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-2  
MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



NOTE:

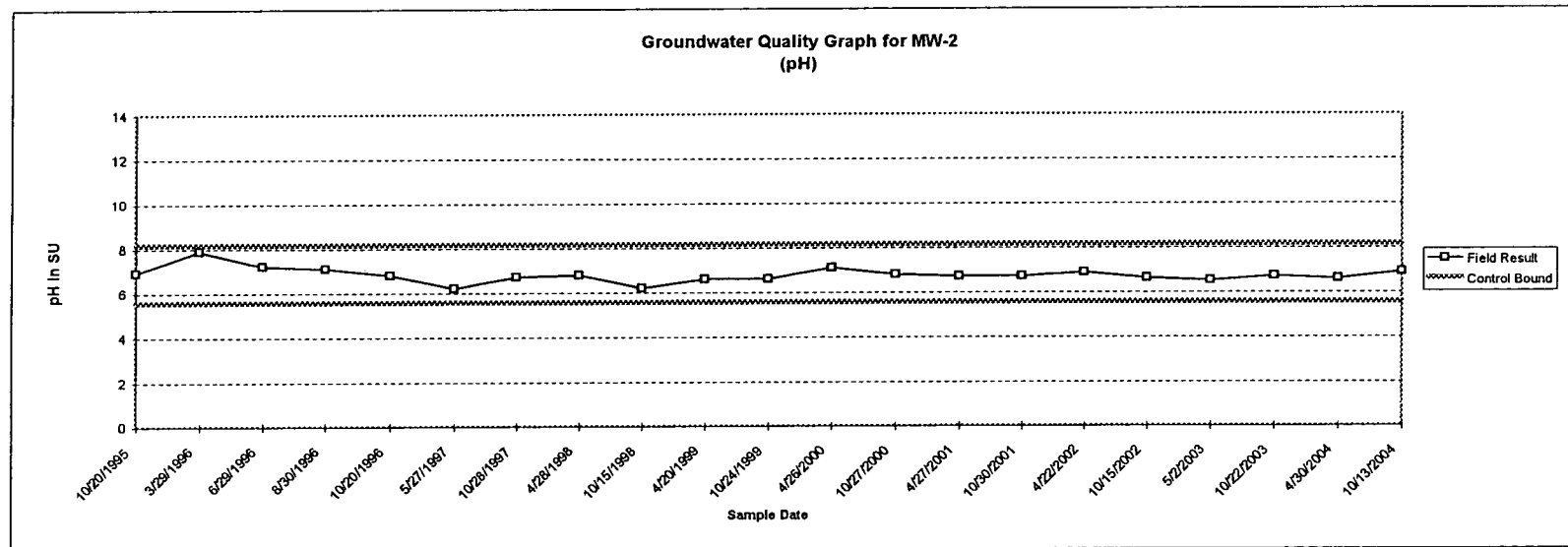
- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MW-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.



# ANALYSIS SHEET MW-2

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



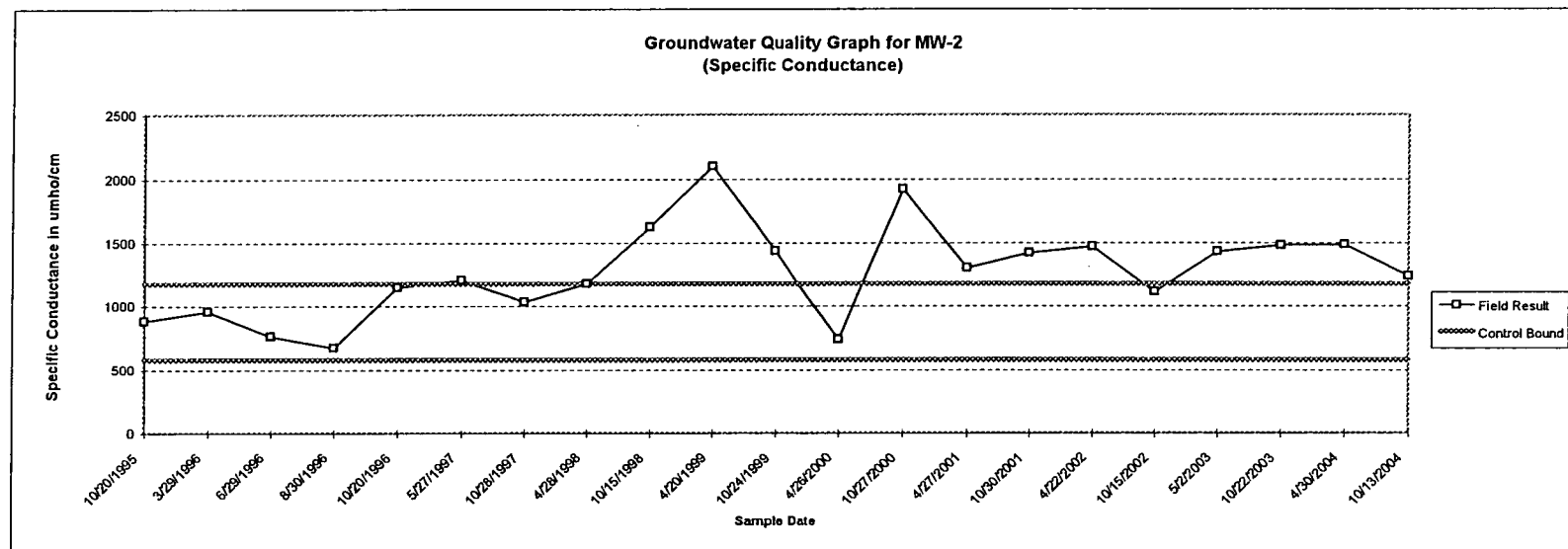
**NOTE:**

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.

# ANALYSIS SHEET MW-2

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



#### NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.

# ANALYSIS SHEET MW-1

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

SAMPLE LOCATION NO. MW-1 (Down-gradient)

ANALYSIS PERFORMED BY: TEST AMERICA INC.

SAMPLED BY: TERRACON

PARAMETER	Statistical Considerations				SAMPLE DATE												
	Upper Control Limit via MW-5	Lower Control Limit via MW-5	MW-1 Standard Deviation	MW-1 Mean	10/20/1995	3/29/1996	6/29/1996	8/30/1996	10/20/1996	5/27/1997	10/28/1997	4/28/1998	10/15/1998	4/20/1999	10/24/1999	4/26/2000	10/27/2000
<b>Laboratory Parameters</b>																	
Chloride (mg/l)	20.1	1.68	2.75	10.90	5.9	7.5	8.7	8.2	6.8	8.4	7.9	13	12	11	11	14.6	12
Chemical Oxygen Demand (mg/l)	13.8	0.00	4.09	4.05	2.5	2.5	18	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Iron, dissolved (mg/l)	0.05	0.05	0.12	0.11	0.33	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.20	0.05	0.05
Nitrogen, Ammonia (mg/l)	0.29	0.00	0.04	0.11	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.1
Phenols, total (mg/l)	0.01	0.01	0.00	0.01	-	-	-	-	0.01	-	0.01	0.01	-	0.01	-	0.01	-
Total Organic Halogens (mg/l)	0.005	0.005	0.059	0.034	-	-	-	-	0.19	-	0.005	0.005	-	0.018	-	0.017	-
<b>Field Parameters</b>																	
pH (SU)	8.17	5.58	0.27	6.87	7.3	7.7	7.10	6.9	7.0	6.7	7.0	7.0	6.6	6.7	6.7	6.8	6.9
Specific Conductance (umho/cm)	1175	575	226	959	869	993	790	660	679	717	579	702	953	1000	868	870	1087

#### NOTE:

- 1) Results shown in bold represent one-half of the laboratory detection limit (MDL) [for parameters reported below the MDL].
- 2) One-half of the MDL was used for parameters reported at concentrations below their respective MDL to compute their respective control limits (mean +/- two times the standard deviation for the chemicals observed at MW-5).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.
- 4) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 5) Results from Monitoring Well MW-5 were used to compute control limits - considered up-gradient well

## ANALYSIS SHEET MW-1

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

## SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

SAMPLE LOCATION NO. MW-1 (Down-gradient)

ANALYSIS PERFORMED BY: TEST AMERICA INC.

SAMPLED BY: TERRACON

PARAMETER	Statistical Considerations				SAMPLE DATE							
	Upper Control Limit via MW-5	Lower Control Limit via MW-5	MW-1 Standard Deviation	MW-1 Mean	4/27/2001	10/30/2001	4/22/2002	10/15/2002	5/2/2003	10/22/2003	4/30/2004	10/13/2004
<b>Laboratory Parameters</b>												
Chloride (mg/l)	20.1	1.68	2.75	10.90	14.2	12.2	13	10.2	11.7	10.8	14.7	15.1
Chemical Oxygen Demand (mg/l)	13.8	0.00	4.09	4.05	11	2.5	2.5	11	2.5	2.5	2.5	2.5
Iron, dissolved (mg/l)	0.05	0.05	0.12	0.11	0.05	0.41	0.05	0.41	0.05	0.05	0.05	0.24
Nitrogen, Ammonia (mg/l)	0.29	0.00	0.04	0.11	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Phenols, total (mg/l)	0.01	0.01	0.00	0.01	0.01	-	0.01	-	0.01	-	0.01	-
Total Organic Halogens (mg/l)	0.005	0.005	0.059	0.034	0.017	-	0.021	-	0.011	-	0.018	-
<b>Field Parameters</b>												
pH (SU)	8.17	5.58	0.27	6.87	6.8	6.8	6.9	6.9	6.5	6.6	6.6	6.9
Specific Conductance (umho/cm)	1175	575	226	959	1085	1101	1218	959	1259	1305	1391	1057

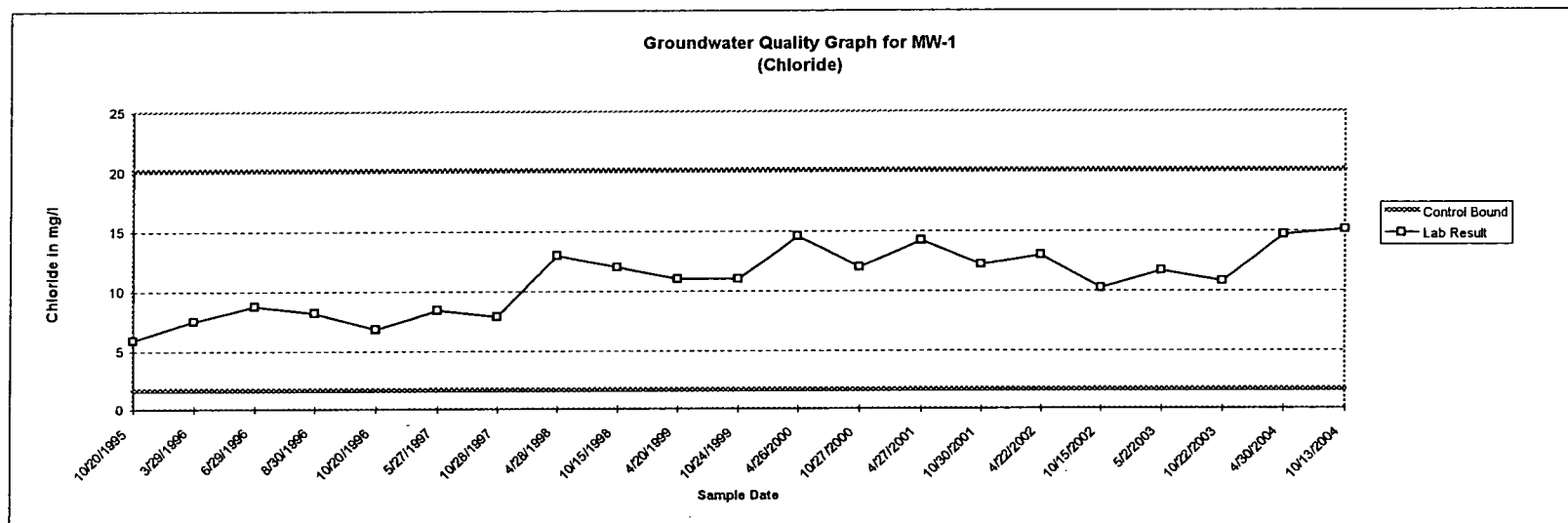
## NOTE:

- 1) Results shown in bold represent one-half of the laboratory detection limit (MDL) [for parameters reported below the MDL].
- 2) One-half of the MDL was used for parameters reported at concentrations below their respective MDL to compute their respective control limits (mean +/- two times the standard deviation for the chemicals observed at MW-5).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.
- 4) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 5) Results from Monitoring Well MW-5 were used to compute control limits - considered up-gradient well

# ANALYSIS SHEET MW-1

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



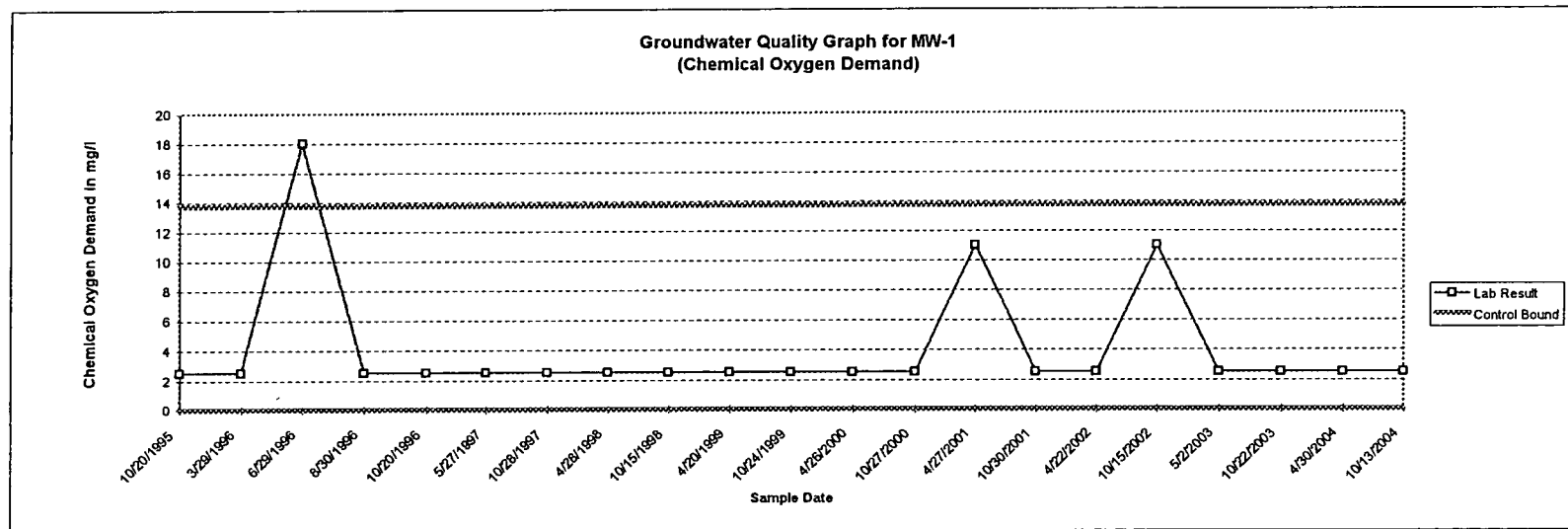
#### NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.

# ANALYSIS SHEET MW-1

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

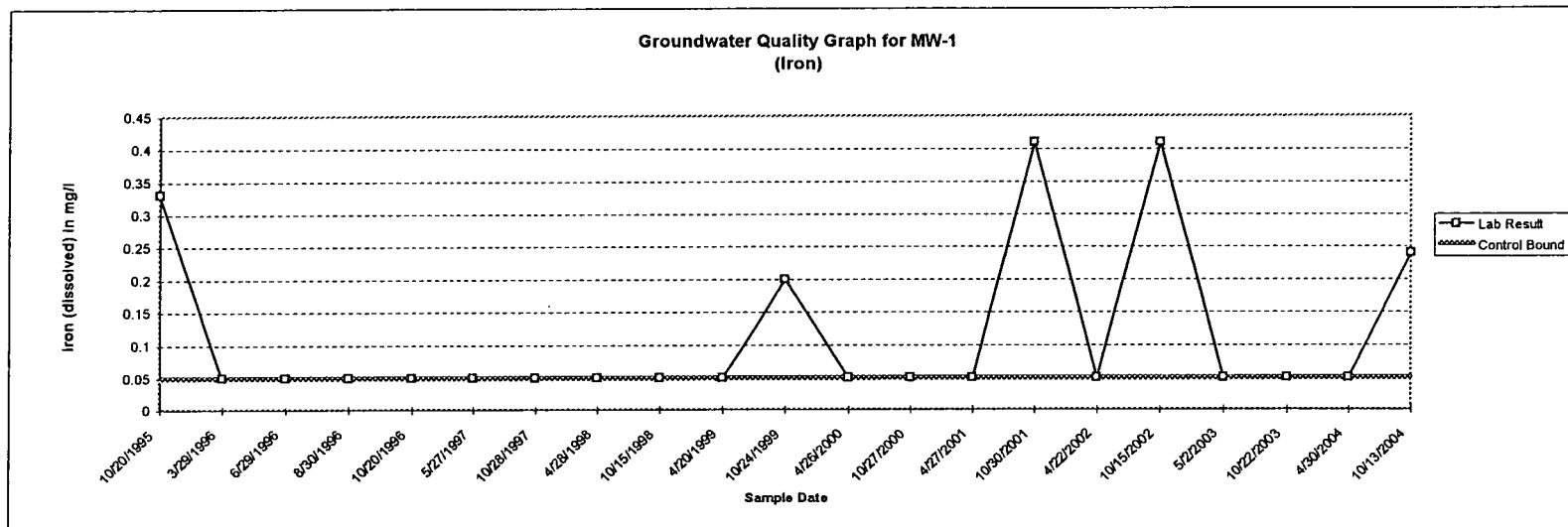


#### NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-1  
MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET

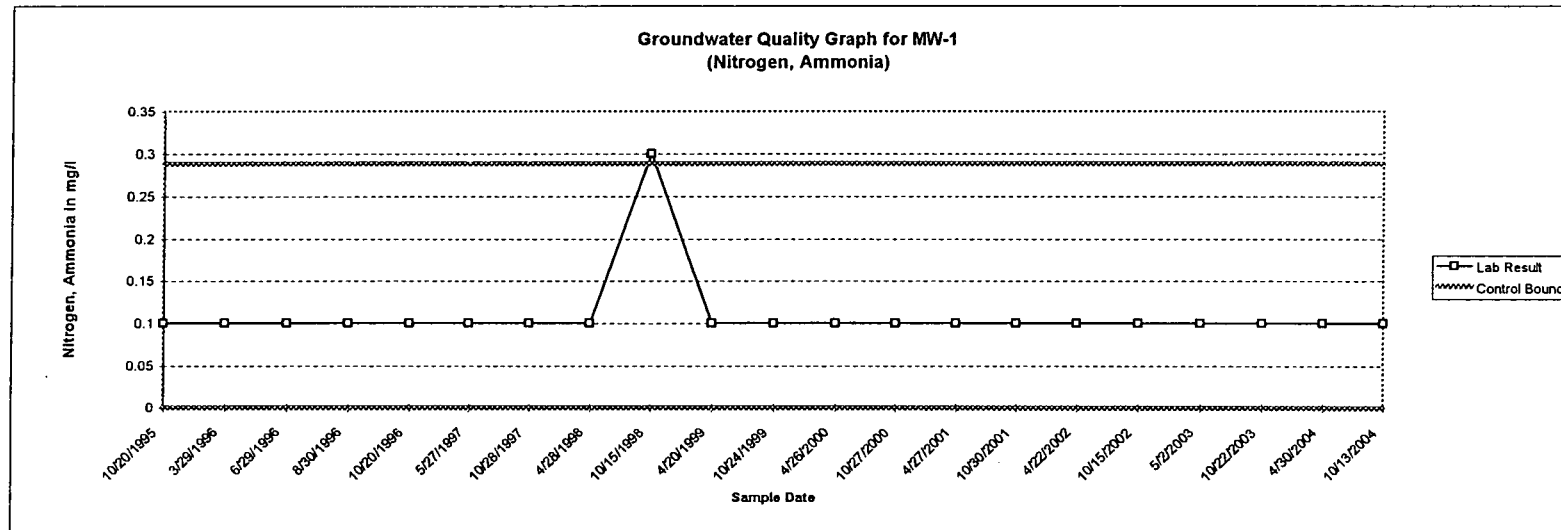


NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MW-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

ANALYSIS SHEET MW-1  
MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



NOTE:

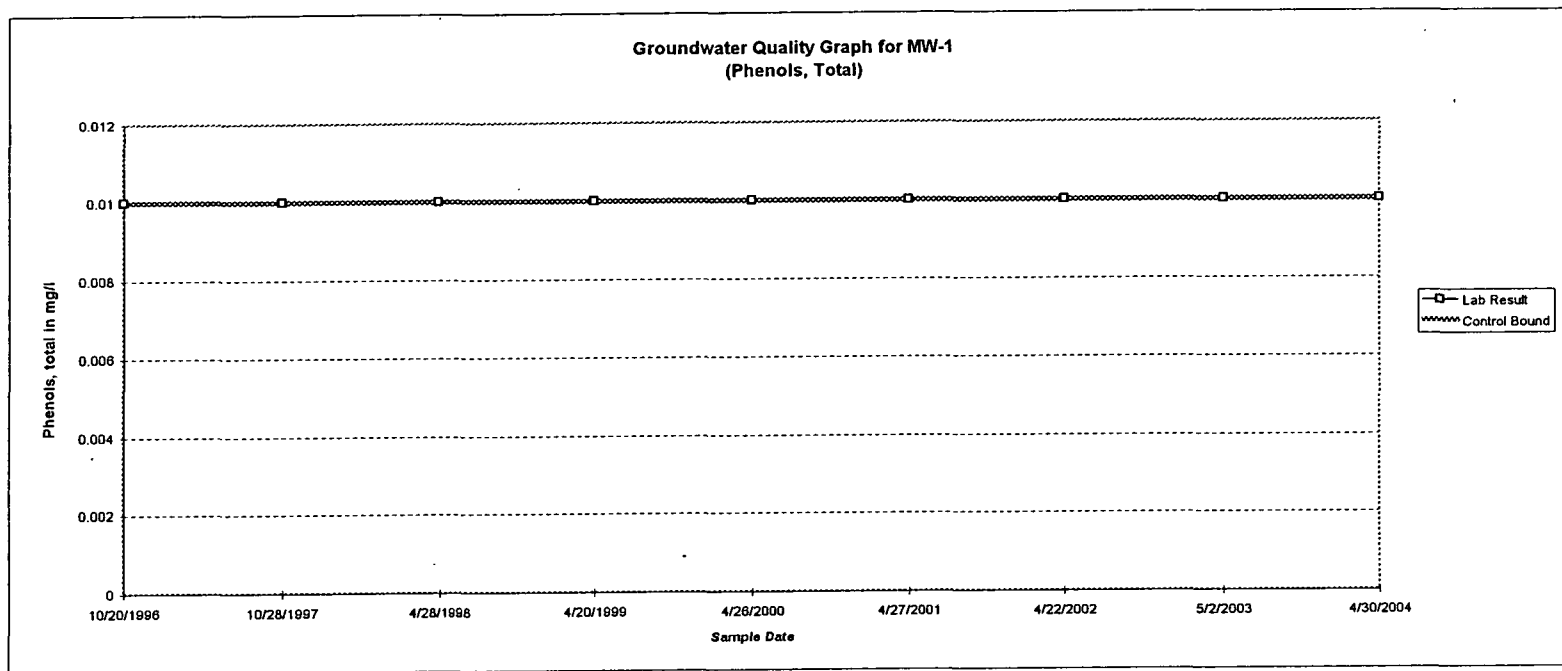
- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) A lower control limit of zero (0) was used for those parameters in which a negative lower control limit was calculated.
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.



ANALYSIS SHEET MW-1

MONONA COUNTY LANDFILL  
GROUNDWATER SAMPLING AND ANALYSIS  
PROJECT No. 40915034

SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



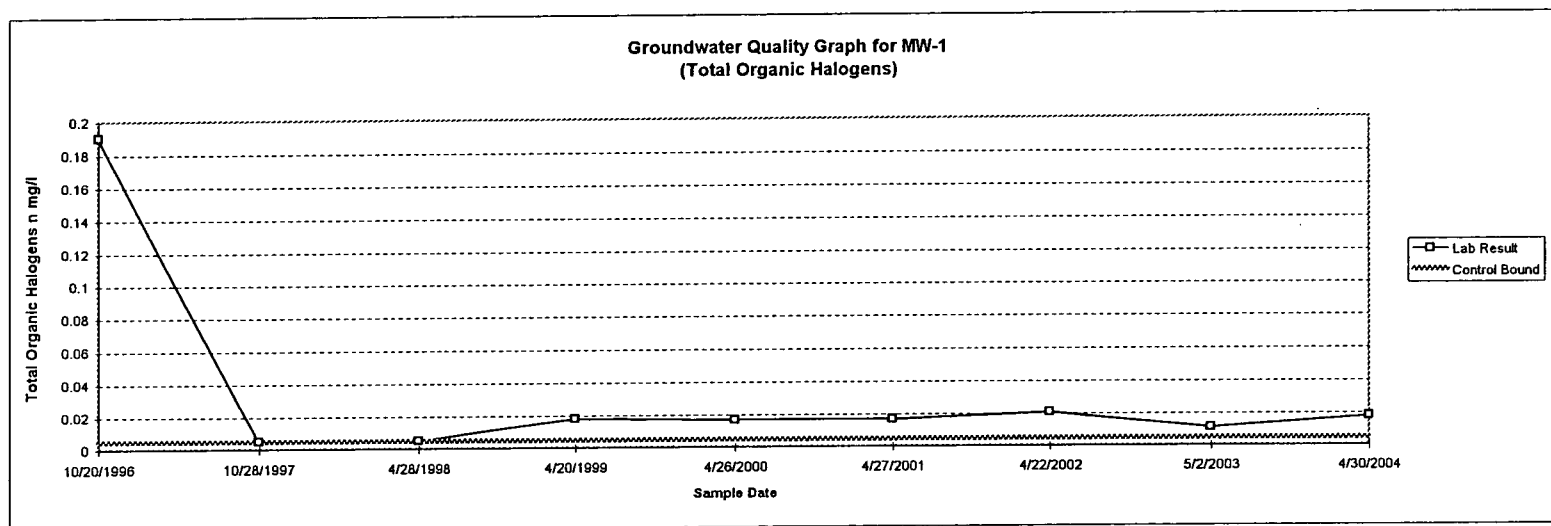
NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MW-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
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# ANALYSIS SHEET MW-1

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



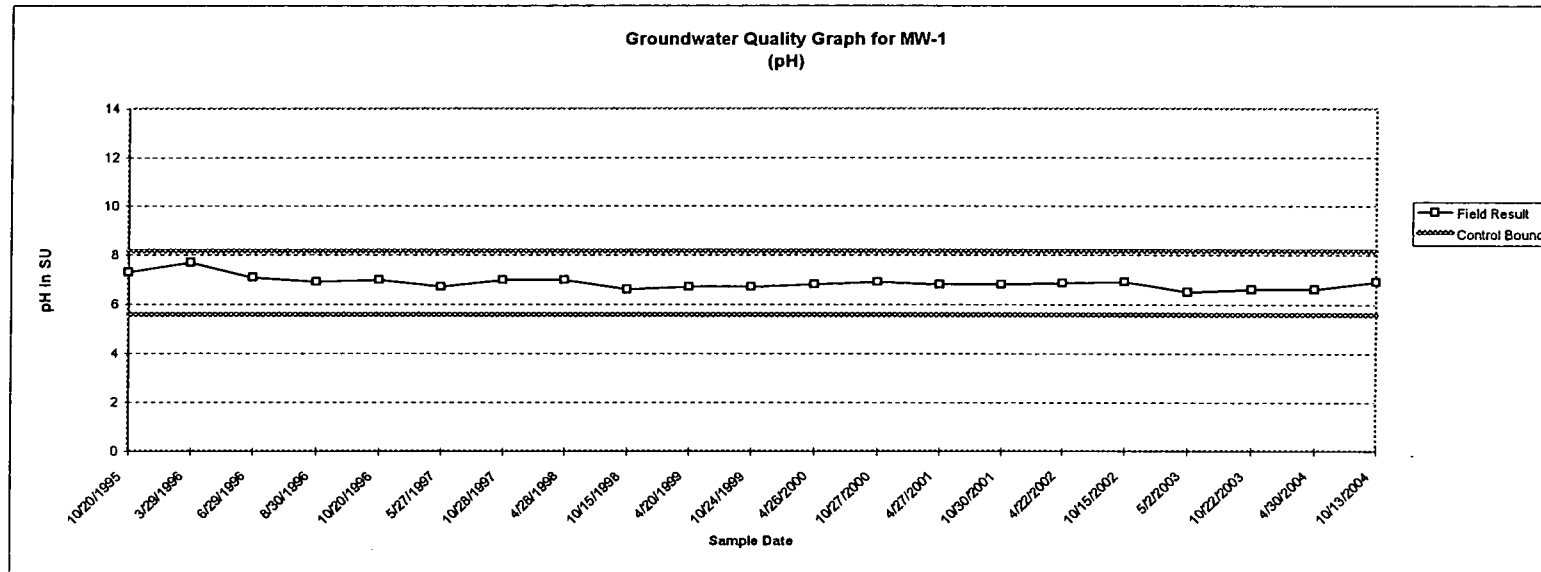
#### NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.
- 2) The same non-detectable concentration results for MW-5 resulted in a single control bound (i.e. there was no deviation from the mean of the data).
- 3) One-half of the MDL was graphed for parameters reported at concentrations below their respective MDL.

# ANALYSIS SHEET MW-1

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



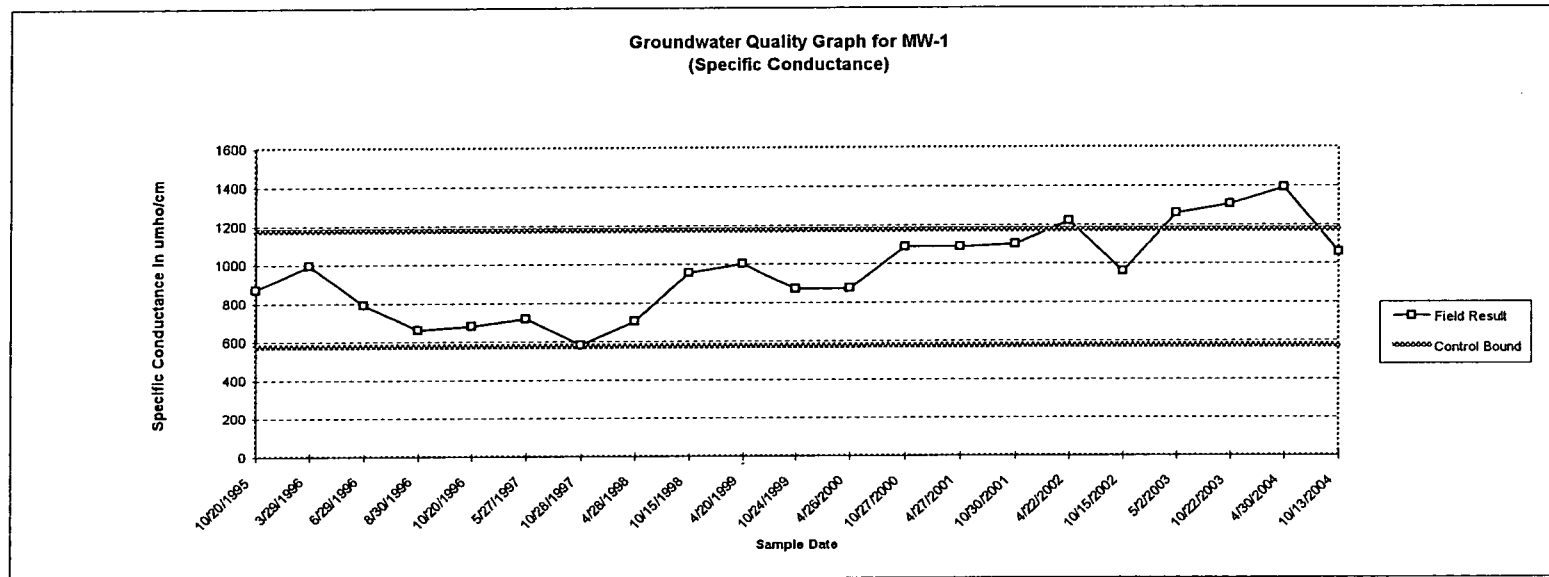
**NOTE:**

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.

# ANALYSIS SHEET MW-1

## MONONA COUNTY LANDFILL GROUNDWATER SAMPLING AND ANALYSIS PROJECT No. 40915034

### SEMI-ANNUAL AND ANNUAL ROUTINE PARAMETERS STATISTICAL ANALYSIS SHEET



#### NOTE:

- 1) Results from Monitoring Well MW-5 were used to compute control limits - considered an up-gradient well.

**TABLE 1**  
**Monona County Lndfill**  
**Terracon Project No. 40915034**

**Summary of Groundwater Elevation Measurements**

Measurement Dates			December 2003		January 2004		February 2004		March 2004	
Location	TOC Elevation (feet)	Screened Interval Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)
MW-1	1219.73	1192.3-1177.3	NM	NM	29.7	1190.03	29.8	1189.93	29.6	1190.13
MW-2	1222.38	1192.9-1177.9	NM	NM	35.3	1187.08	35.4	1186.98	35.2	1187.18
MW-3	1266.15	1215.2-1200.2	NM	NM	48.2	<b>1217.95</b>	48.1	<b>1218.05</b>	48.3	<b>1217.85</b>
MW-4	1261.62	1208.6-1193.6	NM	NM	52.5	<b>1209.12</b>	52.5	<b>1209.12</b>	52.4	<b>1209.22</b>
MW-5	1335.73	1229.0-1214.0	NM	NM	104.7	<b>1231.03</b>	104.8	<b>1230.93</b>	104.6	<b>1231.13</b>

**NOTES:**

TOC = top of casing elevation (feet)

Water level depths were measured and reported by the landfill operator with exception of levels for April and October 2004

Bold numbers represent water levels outside screened intervals

NM = Not Measured

TABLE 1  
Monona County Lndfill  
Terracon Project No. 40915034

Summary of Groundwater Elevation Measurements

Measurement Dates			April 2004		May 2004		June 2004		July 2004	
Location	TOC Elevation (feet)	Screened Interval Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)
MW-1	1219.73	1192.3-1177.3	30.18	1189.55	29.6	1190.13	29.7	1190.03	29.6	1190.13
MW-2	1222.38	1192.9-1177.9	35.64	1186.74	35.4	1186.98	35.1	1187.28	35.1	1187.28
MW-3	1266.15	1215.2-1200.2	51.13	1215.02	48.3	<b>1217.85</b>	48.3	<b>1217.85</b>	48.0	<b>1218.15</b>
MW-4	1261.62	1208.6-1193.6	53.61	1208.01	52.6	<b>1209.02</b>	52.4	<b>1209.22</b>	52.1	<b>1209.52</b>
MW-5	1335.73	1229.0-1214.0	104.95	<b>1230.78</b>	104.6	<b>1231.13</b>	104.6	<b>1231.13</b>	104.4	<b>1231.33</b>

**NOTES:**

TOC = top of casing elevation (feet)

Water level depths were measured and reported by the landfill operator with exception of levels for April and October 2004

Bold numbers represent water levels outside screened intervals

**TABLE 1**  
**Monona County Lndfill**  
**Terracon Project No. 40915034**

**Summary of Groundwater Elevation Measurements**

Measurement Dates			August 2004		September 2004		October 2004		November 2004	
Location	TOC Elevation (feet)	Screened Interval Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)
MW-1	1219.73	1192.3-1177.3	29.6	1190.13	30.0	1189.73	32.97	1186.76	29.2	1190.53
MW-2	1222.38	1192.9-1177.9	35.1	1187.28	35.3	1187.08	37.90	1184.48	34.5	1187.88
MW-3	1266.15	1215.2-1200.2	48.4	<b>1217.75</b>	48.2	<b>1217.95</b>	51.85	1214.30	48.0	<b>1218.15</b>
MW-4	1261.62	1208.6-1193.6	53.0	<b>1208.62</b>	52.3	<b>1209.32</b>	54.22	1207.40	52.1	<b>1209.52</b>
MW-5	1335.73	1229.0-1214.0	105.0	<b>1230.73</b>	104.6	<b>1231.13</b>	105.58	<b>1230.15</b>	104.8	<b>1230.93</b>

**NOTES:**

TOC = top of casing elevation (feet)

Water level depths were measured and reported by the landfill operator with exception of levels for April and October 2004

Bold numbers represent water levels outside screened intervals

**TABLE 2**  
**Monona County Landfill**  
**Terracon Project No. 40915034**

**Summary of Leachate Measurements**

Location	Measurement Dates											
	Dec 2003	Jan 2004	Feb 2004	Mar 2004	Apr 2004	May 2004	Jun 2004	Jul 2004	Aug 2004	Sep 2004	Oct 2004	Nov 2004
LW-1	NM	dry	dry	dry	dry	dry	dry	dry	dry	dry	1.4 ft	dry
LW-2	NM	2 ft	0.3 ft	0.5 ft	1 ft	dry	2.5 ft	0.3 ft	1 ft	.5 ft	8.3 ft	1.5 ft
LW-3	NM	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry

**NOTES:**

Values presented above represent leachate thicknesses in feet above the bottom of the leachate well.

Leachate levels measured by landfill operator, except for the month of October when leachate levels were measured by Terracon.

Indications of leachate were observed by Terracon in LW-3 in October but could not be confirmed with a bailer due to an apparent obstruction in the leachate well.

NM indicates not measured.



**TABLE 3**  
**Monona County Landfill**  
**Terracon Project No. 40915034**

**Summary of Hydraulic Conductivity Measurements**

	MONITORING WELLS				
DATE	MW-1	MW-2	MW-3	MW-4	MW-5
Nov - 1992	8.10E-05	4.00E-04	4.20E-05	3.00E-05	1.60E-05
Oct - 1998	2.03E-04	1.18E-03	5.53E-05	1.70E-05	2.10E-05
Oct - 2003	1.04E-04	7.27E-05	2.70E-05	2.72E-05	6.07E-05

Hydraulic conductivity values given in units of centimeters per second (cm/sec).